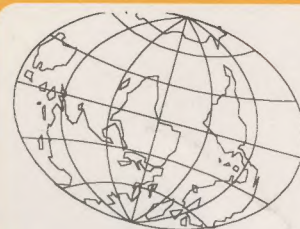


Bob Cooper's

JUNE 15 1996

# SatFACTS

MONTHLY



Reporting on "The World" of satellite television in the Pacific Ocean Region

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(DVB WHAT?)**

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- ✓ Latest Hardware News
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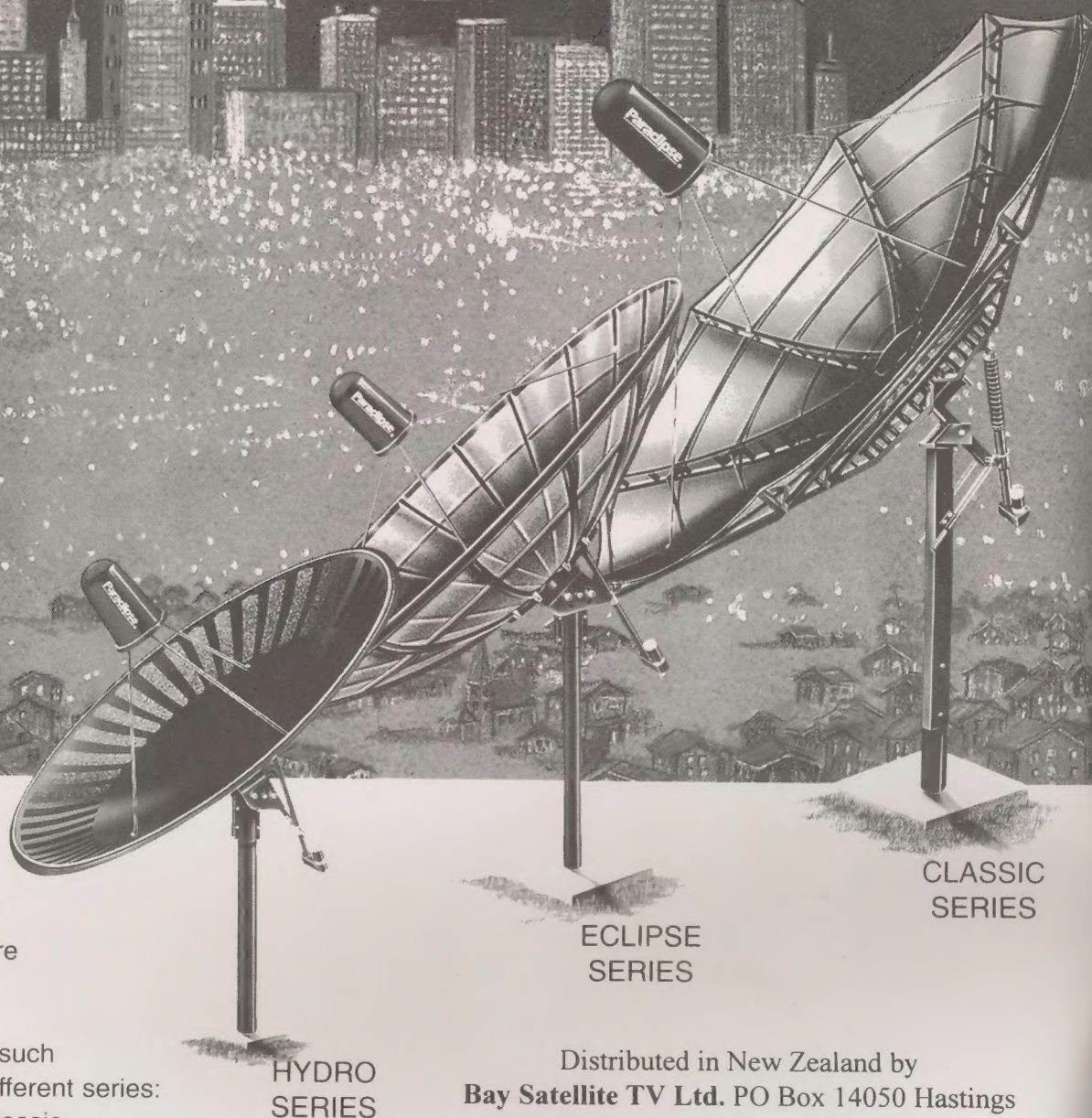
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SatFACTS Monthly is published 12 times each year (on or about 15th of each month) by Far North Cablevision, Ltd. This publication is dedicated to the premise that as we enter the 21st century, ancient 20th century notions concerning borders and boundaries no longer define a person's horizon. In the air, all around you, are microwave signals carrying messages of entertainment, information and education. These messages are available to anyone willing to install the appropriate receiving equipment and, where applicable, pay a monthly or annual fee to receive the content of the messages in the privacy of their own home. Welcome to the 21st century - a world without borders, a world without boundaries.

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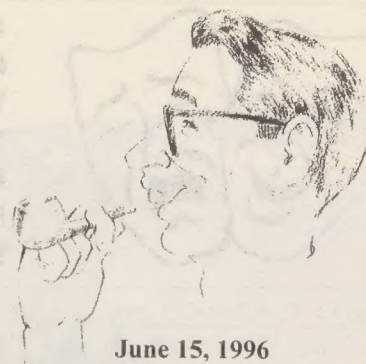
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## COOP'S COMMENT

In the past 30 days since last we met here, the Pacific satellite world has gone into its own orbit. First there was C2M, launched May 17th in full view of the Pacific and Asian worlds courtesy of TPI, TVRI and other Indonesian telecasters. Followed June 3rd by the first reports of it testing at 124E (Garry Cratt in Australia measured a 12dB C/NR on the first test carrier using a 1.8m dish; that is promising!).

One June 1st in Fiji, Uniden (NZ) Ltd. announced to 450 NZ electronic retailers during



Indonesian TPI coverage of C2M launch; directly behind model Ariane right of centre, coverage map including parts of Australia, New Zealand.

their annual conference entry into the home satellite dish field. Uniden C-band top of the line systems will sell for upwards of NZ\$5,000 installed and they are targeting 100 electronic retail outlets for "demonstration dish systems" over the next 4 months. That works out to 1 installation each working day. Important? You bet! With Uniden "brand name" recognition and 100 retail outlets showing off home dish reception, TVRO in NZ just made the big time.

On May 23rd the first long-promised Scientific Atlanta MPEG-2 receiver arrived in New Zealand. Anxious people wanted to know: How does it work on the European Bouquet? The short answer: Out of the box, **it does not**. In fact, a careful reading (and rereading) of the manual observes that at no point does SA tell you it is "(European standard) DVB Compliant." *Were we not told it would be DVB Compliant???*

Also in the "It did not happen department," Pace DVR-200 DVB Compliant receivers, promised to Skandia in May, did not arrive. Not to worry: Unexpectedly, the first wave of Panasonic receivers did show up at OPAC Pty Ltd.

Then on June 3rd German broadcaster Deutsche Welle "made a minor change" in its MPEG-2 transmission parameters on AsiaSat 2 and suddenly, all of those tens of thousands of (Galaxy) DGT-400 and a smaller universe of Pace DVR-500 receivers can tune-in their five channels of European Bouquet television.

If you think the "tempo" of events has increased, you are right!

## In Volume 2 ♦ Number 22

### DVB COMPLIANT RECEIVER TESTS

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With The Observers -p.26; June Reporting Form -p.30; C2M Reporting Form -p.30

### -ON THE COVER-

NO - this is not a repeat of our May cover! A Patriot 3.1m solid dish is jockeyed onto an elevated pole mount for 5 degree look angle reception from As2 at a cable headend in NZ.

With European Bouquet services now running full, the programming is finally here.





## LETTERS

### Jumping To NTL's Defence

"What little game are you playing with your NTL 3000 System comments? This is a professional receiver: general construction and connectors conform to normal professional standards. It is designed to be operated in racks with banks of similar receivers; think of the pandemonium in a headend if the access code was not necessary. Your published photographs do not reflect a professional approach. Male XLR whether chassis mounted or flying cord is the accepted normal professionally line level audio output standard. Your photographed connections using alligator clips is totally unacceptable. The lack of professional manual and engraved plate suggests to me your source for sample or trial may not be 'legitimate'. The manual I use is very complete and manual updates seem totally adequate. What gives?"

Nigel C. Clough, Waikanae, NZ

XLR connectors do not justify a US\$5,000 price tag. Our 'game' is to question not the performance (it works well enough) but the pricing structure. If XLR is the "normal professional standard" then GI, SA and virtually all other MPEG receiver manufacturers must have missed that "class." Or perhaps you believe them to be amateurs. My collection of 1938 Wireless World (magazine) show XLRs on audio equipment advertised. It also depicts 72 ohm "twisted pair" TV aerial wire for sale. Mercifully, we outgrew twisted pair TV lead-in wire and most manufacturers have also moved beyond XLR connectors as well. In a year, US\$5,000 MPEG receivers will be equally "antique."

"In your Coop's Comment you suggest an IRD with interchangeable modules. Are you acquainted with the TANBERG IRD? It seems to go some way towards providing what you are asking for. I regret I do not know who the agents are in either NZ or Australia.

-continued on page 4-

## PROGRAMMER PROGRAMMING PROMOTION

## UPDATE

JUNE 15, 1996

**Palapa C2M** began testing from 124E (surprise!) June 2 with several carriers on horizontal. First reporter: Mark Long in Thailand. See 'With The Observers', p.26.

**European Bouquet** operator Deutsche Welle did "minor software change" June 2nd and asked observers with DGT-400, DVR-500 and other previously non-compatible receivers to recheck for reception. Bingo! Details on page 18.

**Malaysian MEASAT** (91.5E) DTH service may end up only on their 4 Ku-band transponders and operated by Measat Broadcast Network Systems (MBNS). Service will have capacity for 20 MPEG programme channels and 8 radio channels. The 12 C-band transponders? "*Fixed and mobile telecommunication services*," according to Datuk Zawawi bin Mahmuddin of the Ministry of Information. The future of TV3 and RTM-1, now on Palapa C1, is uncertain but "*Yes, they could migrate exclusively to Measat*" according to reports; perhaps very soon. This would leave Malaysia out of the C1 mix and provide two C1 transponders for new users.

**Sky Channel** (horse racing) has not only abandoned C1 (SF#21, p.2) but will cease B-Mac transmissions on Intelsat 180 today (June 15); all in favour of temporary B-Mac on As2 (4020Hz/ IF1130) which is scheduled for replacement with MPEG-2 format (using Pace receivers) perhaps by September.

**Russians** are now using 3925 MHz (IF 1225) on Stationar 21 at 103.2(045)E which is causing enhanced problems for Star TV reception at Japanese CATV reception sites with AsiaSat 2 feeds on 3900 MHz (transponder 7A). Previously the Russians used 3660, 3775 and 3875 on this satellite. The 3925 transponder has 10 SCPC carriers and some data signals. Most recent available (1 May) NASA listing shows Russian satellite is inclined (+/-) 1.82 degrees. Of interest, same NASA list shows As2 NOT to be at 100.5 but rather at 100.7(058).

**NBC (Asia + CNBC)** is offering New Zealand motel operators a deal many cannot refuse; if they agree to pay US\$0.06 per occupied room per day, NBC will ship them a pair of DVR-500 decoders. No charge. Motellers must respond with supplied form to get details; plenty of opportunity here for dish system installers to follow up with offer to provide fixed antenna system for PAS-2 digital NBC feeds.

**Chinese** national TV (Mandarin dialect) has begun regular scheduled transmissions on two As2 horizontal transponders; IFs 1430 and 1310. These are the regular, regional, feeds with plenty of sport, movies, general entertainment programming unlike CCTV feed which is basically a propaganda tool. Services are FTA analogue, audio 6.6.

**Laotian TV** service has appeared on R41 (130E) IF 1375. This hemi beam should be reasonably well received in northern Australia, most of SE Asia. Laotian dialect is very similar to Thai making it useful for those who speak Thai.

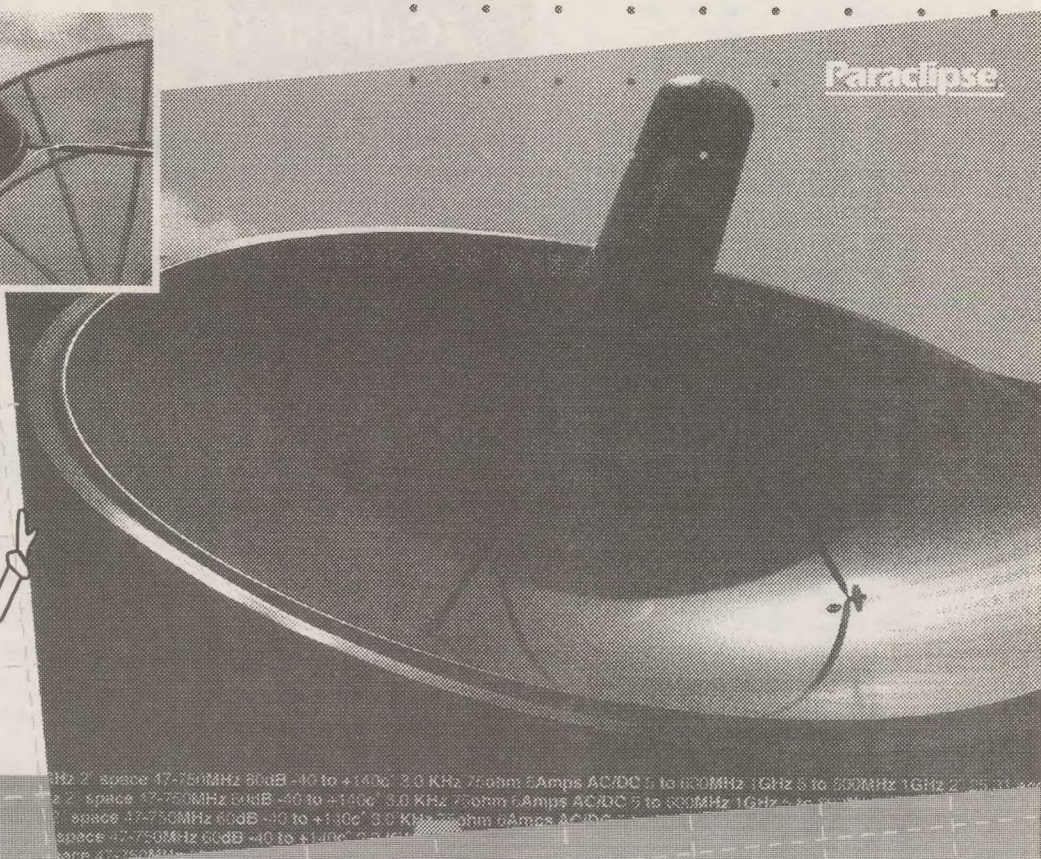
**TI** (terrestrial microwave system interference) v. MPEG-2 transmissions? First wave of NTL-3000 receivers going into Japan, where terrestrial use of 4 GHz range is high, suggests that if the 'TI' source is as high as or higher than the MPEG signal on a spectrum analyser, you will have significant BER (bit error rate) problems.

**The Value Channel** (TVSN) will be distributed on PAS-2, As2 in FTA analogue; PAS-4 in MPEG-2; latter on South Asia/Middle East beam.

**PACE DVR-200 receivers**, through Skandia, are delayed in "*Pace bureaucracy*" and are now rescheduled to arrive in Australia around the 20th of June.

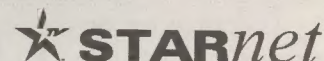
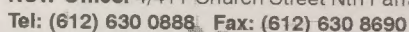
**Palcom 7900** lockup on 30 Ku channels? Disconnect power at mains, simultaneously push channel up and channel down buttons and reinsert the power.





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- Letters - continued from page 2-

"In your report on the D-MV system 3000 IRD, you tend to try and compare the unit both 'price wise' and 'user friendly wise' to lower quality units designed for the home market. The 'Pace' unit is the DTH model offered for the D-MV system, while the system 3000 IRD is designed for the broadcast and cable headend market; hence the use of higher security and 'XLR' connectors. I would agree it is somewhat more expensive when compared to an equivalent SA unit, but this is because the system 3000 is not mass produced in any quantity and not intended for the DTH Market."

Lewis Woodburn, Manager,  
TVNZ Satellite Services

Can any reader shed light on the Tanberg IRD, including contact information?

#### CDE-2000 Receiver Compatibility

"We have tried a number of satellite receivers with the SA CDE-2000 B-Mac decoder and here is what we found: The Palcom 7900, Dynalink 400, Dynalink 50 and Winersat all produce distorted audio. The Dynasat 200 and 300, the Drake 600E, 700E and 800E all produce good quality sound. On a 4m dish, ADL C/Ku feed, TNT and HBO are P5, ESPN is P4 and Discovery cuts in and out."

D. Leach, NSW, Australia

A classic example of not having 'pure' (unfiltered, unclamped) video out of the receiver(s) to drive the CDE-2000. Receiver bandwidth setting can also aggravate this problem. AV-COMM Pty Ltd. advises they have a quick-fix for the Dynalink 400 and will supply full details upon request.

"I have a Palcom 7900 and e1-cheapo Dracom. The CDE-2000 works fine on the Dracom, audio is distorted on the Palcom?"

T. Hobson, NSW, Australia

Palcom is working on a solution to this and Bay Satellite should have information shortly.

#### New Programmers/ June 15-July 15

**The Value Channel** - Australian based home shopping in NTSC FTA analogue on PAS-2 TR15 (4165VT/IF985) July 1, PAL FTA analogue As2 (July). Note: TR15 on PAS-2 only temporary; expect change mid-July. Contact George Frame (tel) 61-2-513-8000.

## HARDWARE EQUIPMENT PARTS

## UPDATE

JUNE 15, 1996

**Scientific Atlanta DVB Compliant D9223** (Packet-Based) receivers being swapped for MPEG 1.5 version units began changeover May 24 for Sylmar fed service(s); primarily CMT. New units will come to users through original distributor, older units will be shipped to SA Singapore at expense of present user. Cost of customs clearance, import duties/taxes, freight from distributor to you is to be paid by distributor who in turn will charge the user. Net result: If you own a D9222, upgrade to D9223, expect to pay around US\$300 for swap of which you may be able to reclaim tax (GST in New Zealand) portion of US\$161.88. Optional: SA is offering two year extension of factory warranty but seems uncertain what this will cost. They give one example: "If two hundred or more responses are received opting for the extended warranty, then SA will invoice you in the amount of US\$150." This is not a guaranteed cost, applies only if 200 or more users agree to this programme. Is it worth it? SF understands SA Australia currently charges A\$115 per hour to work on 9708 units so for approximate cost of 1.5 hours of shop time, you are covered for two additional years. Still confused? SA Australia tel 61-2-452-3388, fax 61-2-451-4432. See p. 6, this issue.

**SA D9222/D9223** are manufactured in Korea but you cannot purchase either there. 9222 buyers have to order out of Toronto so units are shipped from Korea to Canada to Korea. Manufacturer in Korea does make home-grown adaptation version known locally as "952" housed in table-top rather than rack housing; identical "guts" to D9222. Biggest 952 user? Local 'BSS' (Buddist Satellite Service).

**Discovery** did frequency change May 21 from RF3785 to 3776 on PAS-2; making room for new user in second half of transponder, and, reduced power by 3dB early May 24th. Their announced use of GI MPEG-2 (SF17, p.2) is off; now will be SA MPEG-2 with hoped-for switchover from B-Mac around 1 August.

**Latest DVB receiver 'rumours'**; Sony anticipating a consumer unit in range of A\$750 'by July'. And, OPAC Pty Ltd suggesting they will have the Panasonic IRD520 "near A\$1199" as early as July; tel. 61-2-584-1233.

**DirecPC** is name of proposed new service from Asia High Tech Satellite Network. US based Hughes Network Systems is part of group involving substantial Japanese partners. Concept is to mix video entertainment, sports and news programming with high speed access to Internet all via satellite downlink. Proposed cost per home system user: US\$1,140 per year. No satellite yet announced but service promotion claims "coverage in 22 Asia and Pacific countries" which at least suggests a C-band footprint.

**ApStar 1A** may be on hold pending resolution of launch schedule but arguments over where it will go when launched continue. Latest attempts are to place it at 122E. APT1 (now at 138E) had similar problems, going first to 131E over strenuous objections from Rimsat (130E) and Japan (132E). APT tried to coordinate 121E but Thailand objected (120E is where Thaicom 4 could go).

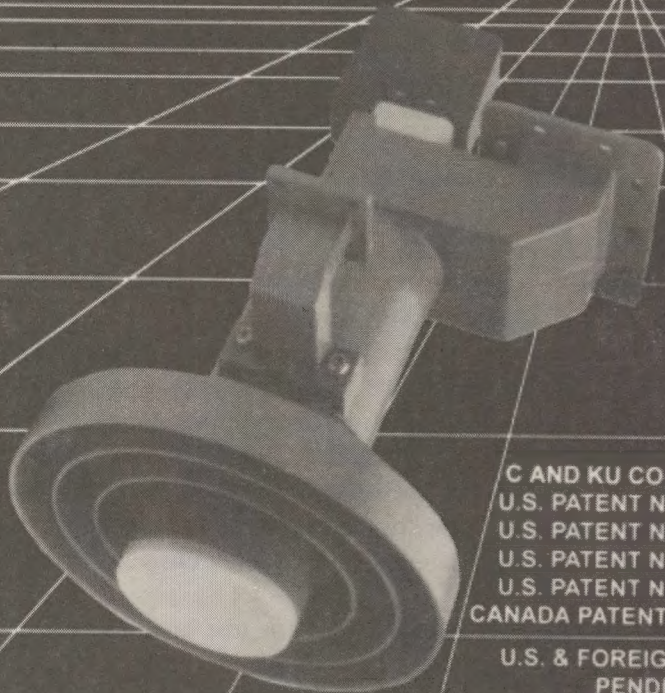
**JCSAT-4**, being built by Hughes using HS 601 body also used for JCSAT-3 at 128E, will go to 124E sometime towards middle of 1997. Latest Japanese multi-banded satellites (S, C, Ku and Ka) are N-Star B at 136E which followed N-Star A launched last August to 132E.

**NTL-3000** receiver owners. The software version you REALLY want is 1.6, not 1.5. Check your diagnostics and then go to NTL for assistance in upgrading. 3000 series receivers MUST see good 75 ohm match at input. Erratic or high BER? Try 3dB power passing pad right at L-band input to receiver.

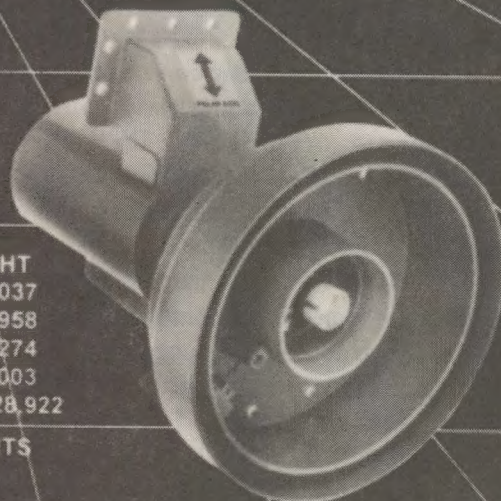


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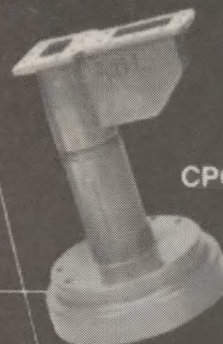
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## THE Scientific-Atlanta D9223 MPEG "DVB COMPLIANT" (?) RECEIVER

### DVB WHAT???

Literature sheets and advertising published prior to the first shipment of the long-awaited Scientific-Atlanta D9223 digital receiver proclaimed it to be a "DVB Compliant" receiver. Based upon these statements a sizeable number of satellite installations in the Pacific have anticipated these units.

The good news is the first unit arrived in New Zealand (for the Bloomberg Financial Services office in Wellington) on May 23. The bad news is the receivers are designed to work primarily as a part of the proprietary Scientific-Atlanta PowerVu (tm) MPEG system now being supplied under contract to PanAmSat. As they come out of the shipping carton the D9223 is neither friendly to "(European) DVB Compliant MPEG-2" nor will you make it friendly to this format by following the instructions reluctantly given to you by a less than helpful Scientific-Atlanta technical team.

At no place in the 73 page manual is this receiver described as "European DVB Compliant." In fact, the terminology we have all come to accept as a benchmark, "DVB Compliant," does not appear. And with good reason. It is not. So what is it?

In the General Description, page 1-1, S-A tells us:

*"The PowerVu receiver is a digital satellite receiver with a built-in MPEG-2 video decompression processor. It is designed to receive and decode/decompress MPEG 1 and MPEG 2 video information streams."*

The manual goes on to state (warn, actually):

*"The variable bit rate receiver is designed to accept a compressed RF signal from a C-band or Ku-band, low noise, block downconverter (LNB) with a frequency*

*range of 950-2050 MHz. Once tuned to the correct downlink frequency, the frequency plan, and virtual channel map is transmitted to the receiver and stored in non-volatile memory. Virtual channels are then used to select authorised services. The frequency plan is downloaded from the PowerVu Digital Encoder Management Computer (DEMC) at the uplink site upon installation."* Go back and reread the emphasised portion.

Translation? The D9223 is a "slave" locked in step to instructions provided by the DEMC. Once the frequency plan has been received by the receiver, it is stored in non-volatile memory; that means it will not wipe clean by turning off the receiver. And?

And once you set the receiver up on the PowerVu DEMC fed frequency, the receiver is totally controlled by instructions received from the uplink. If you try to change parameters (such as the L band input frequency) after the receiver is "slaved" you are SOL; the receiver's front screen tells you "Err" which is shorthand for error. Or, you can't change me (without extensive software re-entry)!

Naturally we took our unit for test out of the box, quickly read the instructions, and dialled in the parameters for the European Bouquet (see page 8, here). Nothing happened on the screen although by going to the Installer Menu we did learn the receiver was receiving the DW services with a good signal level and a totally acceptable BER (bit error rate). Next we tried it on the Star TV As2 feeds, the NBC feed on PAS-2 and in desperation the intended 1249 horizontal feed established by PanAmSat and S-A especially for the PowerVu receivers. This was a mistake because while it

### WHAT THE D9223 WILL and WILL NOT DO

It will not come out of the box, plug-in, and do DVB Compliant MPEG-2. As it leaves the factory in Canada, the D9223 is factory set-up to respond only to Scientific-Atlanta's own unique (and apparently known only to them) variation of MPEG-2 known as PowerVu. At the present time this unique-to-SA variation in MPEG-2 is found in the Pacific on PAS-2, 3901 MHz (IF 1249) horizontal launched May 10th. A second PowerVu feed is reported to be up on L-band 1001 vertical with ABN et al on it. To exit PowerVu you first need to defeat the PowerVu "slave-lock" which happens if the receiver is tuned to a PowerVu service. Then you must locate "Menu 6" on a diagnostics screen and enter "secret commands" (not provided in the manual) to tell the receiver the parameters of the DVB Compliant service you wish to tune. *Amongst* these commands are the PID or packet ID numbers (one each video, audio) for the programme service you wish to tune in. The best source for the PIDs is the broadcaster (see page 8, here). You may also need the "Network ID" and "Bouquet" numbers as well from the broadcaster. In the best case, if this works, you will then have access to a single programme channel on a DVB Compliant transponder at a time; to change from DW to RTVE, for example, apparently you must go through the entire "secret command" routine again. The "channel scroll" buttons on the D9223 apparently work only on a PowerVu service. Good



quickly turned on to the CMT feed from Sylmar, we could not make it leave that feed no matter what we tried!

In the rear of the manual appears a North American help-line number. We called it.

"Is this an emergency?" the voice asked. It turned out he was in Florida and it was midnight there. We said it was not but the voice decided it was and took down the bare essential information from us. He promised someone with expertise on this "new product" would call us shortly. Fifteen minutes passed and Albert Ulloa rang from Toronto.

"Have you checked your LNB?" he asked. We explained the same dish and LNB was driving several cable TV receivers including a pair of 9222s for CCTV and NBC Asia. Eventually Albert, who possibly had been awoken from a sound sleep, caught on.

"You want to tune in - what service?" We described the European Bouquet, again.

"Does S-A uplink this service?" he wondered. We assured him S-A did not.

"So it is not PowerVu encoded?" he queried us. We told him it was "European DVB Compliant" and not PowerVu anything.

"Oh - *that's* your problem. The receiver is designed for PowerVu only." Could he explain to us the difference between PowerVu MPEG 2 and DVB Compliant MPEG-2? He could not but assured us the D9223 will not work as "factory configured" on any service that is not PowerVu.

We asked if we could give it new commands in our headend to force it to work with the DW DVB Compliant service. We read him a line from the factory promotion sheet in which several months ago S-A was suggesting the receiver would be "DVB Compliant."

First he said no, he could not, and then said he might have something after all. A six step procedure followed. He repeated it twice and we read our notes back to him. He said "You have it!" and we told him we didn't think so. Could he fax us the same information in writing the next day from his office? He would.

As he read this six steps to be performed he kept mumbling that if we missed the proper sequence the "receiver could lock up and you may not be able to get back to the PowerVu service." That was frightening and

without written instructions we felt very reluctant to take our telephone notes to try this six step process.

A fax the next day said it all, briefly and clearly.

"I will not be able to provide you with the procedure you requested" and he urged us to telephone S-A in Sydney "where Nick Graham will be able to provide you with the proper answers."

So there we were with a NZ\$2,880 box that received CMT (quite nicely we will admit, but then so does our D9222), ordered to allow us to receive services from the European Bouquet on As2. It was a Saturday morning and Sydney's S-A office would be closed until Monday. And the receiver said "Err" everything we tried to change something; anything. For \$2,880 NZ the least they could have done was provide enough room on the front panel LED display to tell me it was an "errOR" to touch the damn thing. My dictionary tells me "err" is to "be mistaken or incorrect," to "do wrong." Perhaps S-A is right, after all; I did wrong by making the mistake of ordering the damn thing in the first place. Or to believe their data sheet that promised DVB Compliant receiver operation.

From June 3rd to the 8th we exchanged five faxes and made seven telephone calls to S-A. We never found anyone who could help. We also never found anyone who was certain the PowerVu receiver could tune-in the European Bouquet.

In desperation we tried to re-establish contact through the S-A bureaucracy with Albert Ulloa. We faxed:

"*Will the D9223 receive the European DVB Compliant services? If the answer is no, please simply advise this. (We) need to do something about getting the European Bouquet services onto our cable system and if this receiver cannot do it, (we) are far better off moving on (to another receiver solution) than being kept waiting for information for weeks on end.*"

As we go to press that fax is 84 hours old; there has been no response.

We know of six D9223 receivers in New Zealand at this time. They all act precisely the same; none will do the European Bouquet no matter how you approach the receiver set-up routine. Nor will any access NBC Asia or the other MPEG-2 format services listed on the next page.

So the D9223 saga continues and we'll return next month with either an update or post-mortem.

---

#### FOR THE RECORD - THE SERVICES ON PAS-2 IF 1249 IN SCIENTIFIC ATLANTA'S MPEG-2

Receiver settings: Band ("C"), L band frequency ("1249 MHz"), FEC Rate ("3/4").

Symbol Rate ("30.80 Ms/s"), Polarisation ("H").

**Ch. 1** (CMT), **Ch. 2** (CBS feeds, others or PAS-2 test card), **Ch. 3** (PAS-2 test card, sporting feeds), **Ch. 4** ([American sports network] ESPN-2), **Ch. 5** (BBC World [audio typically left hand channel only]), **Ch. 6** (Bloomberg Financial Services)



**THOSE \*#\*&! PID (PACKET ID) NUMBERS - ANOTHER GAME IN TOWN (1)**

Bird	L-band freq	Service	Pgme. Ch.	FEC	(K)(M)s/s	Video PID	Audio PID
AsiaSat 2	1150 MHz Horizontal	Deutsche Welle	1	3/4	28. 125	200 512	280 640
		TV5	2	same	same	201	284
		RTVE	3	same	same	202	288
		MCM	4	same	same	203(?)	292(?)
		RAI	5	same	same	204(?)	296(?)
AsiaSat 2	1250 MHz Vertical	Star Plus (*)	1	1/2	28. 100	200	280
		BBC World	2	same	same	201	284
		VIVA	3	same	same	202	288
		Star Chinese	4	same	same	203	28C(**)
		Not in use	5	same	same	204	290
		Sky News	6	same	same	205	294
		Sky Radio	7	same	same	200	283
AsiaSat 2	1351 MHz Horizontal	Associated Press TV	1	3/4	5. 632	200	280
PAS-2	1057 MHz Vertical	CNBC	1	3/4	29. 473	200	28A(**)
		CNBC MandarinA	2	same	same	201	294(**)
		NBC Asia	3	same	same	202	29E(**)
		Test	4	same	same	203	2A8(**)
		CNBC Mandarin-B	5	same	same	204	2B2(**)
		NBCAsia 2 (Mandarin)	6	same	same	205	2BC(**)
		Test	7	same	same	206	2C6(**)
PAS-2	1249 MHz Horizontal	CMT	1	3/4	30. 800	1160(***)	1120/1122
		PAS-2, feeds	2	same	same	1260(***)	1220/1222
		PAS-2, feeds	3	same	same	1360(***)	1320/1322
		ESPN-2	4	same	same	1460(***)	1420/1422
		BBC World	5	same	same	1560(***)	1520/1522
		Bloomberg	6	same	same	1660(***)	1620/1622

1/ Our thanks to **Peter Merrett**, SCITEQ, Waneroo, WA for assistance with researching the PID listings. \* / Transmitted in NTSC; all others are in PAL including Filipino feed of VIVA Cinema. \*\*/ As read on NTL 3000 diagnostics screen. \*\*\*/ as read on D9223 diagnostics screen. Twin audio means stereo.



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## THE PACE DVR-500 DVB MPEG COMPLIANT RECEIVER

When NBC made the digital MPEG decision, they were forced to consider how they would get there. The options available during 1995 included GI, S-A, a number of lesser known proprietary encoding systems and the NTL created and engineered Pace package. GI and S-A offered a wealth of experience with their own MPEG 1.5 formats but only Pace had real world operating MPEG-2 systems which were rooted in the European DVB Compliant standard.

The DVR-500 receiver has been supplied to NBC cable and SMATV affiliates throughout the Pacific and Asia. The true "cost" of this receiver is unknown since it is not yet available in the normal marketplace. Pacific Satellite in Hong Kong (1) is the distributor on behalf of NBC and to date they have shown no interest in selling the units outside of the NBC affiliate group. In January NBC representatives were describing their (then unnamed) MPEG-2 receiver as a "US\$600 item."

To build an audience NBC has launched an aggressive programme of distributing receivers either at cost or at no-charge to potential affiliates. Potentially, thousands of DVR-500s are now in affiliate hands or the pipeline. NBC's first choice is to deal with a cable TV affiliate, their fall back position in an area lacking a cable affiliate is to identify SMATV systems and talk them into becoming NBC users. The basic programming package consists of CNBC (financial news channel), and NBC Asia (general entertainment channel). However, with 7 MPEG-2 programme channels they have some additional flexibility. Subject to change, they are offering or plan to offer shortly CNBC in Mandarin and NBC Asia in Mandarin in addition to the English language feeds.

---

1/ Pacific Satellite International Ltd., Hong Kong  
fax 852-2558-0406; telephone hotline  
852-2898-1909.

2/ In fact any Australian Galaxy DGT-400 receiver should be able to tune-in the NBC service by simply forcing it to the Installer Menu (pin # 4252) and entering in the 5150 MHz LNB frequency and a frequency of 4093 (see SF#19, p. 12). The NTL 3000 series receiver also tunes in the NBC transmissions by entering in 4093 MHz, symbol rate of 29.473 and FEC 3/4 (these last two numbers are the same as the Galaxy numbers). The S-A D9223 will NOT do this (see p. 6, here).

DTH? The present policy does not include DTH users via the DVR-500 receiver system in use for PAS-2. NBC claims their CNBC and NBC Asia (English) services will be a part of the "Murdoch Bouquet" via AsiaSat 2 when this package of programming starts later this year and in their mind set the Murdoch package distribution will cover them for DTH. However, this plan overlooks an important element of the Murdoch regional broadcasting scenario: DigiStar will only be available to DTH users in selected markets (Japan, Philippines, India, China, Indonesia and Malaysia) which eliminates for DTH purposes viewers in say PNG, New Caledonia, New Zealand and a hundred other locations within the As2 footprint coverage.

Still, the DVR-500 is here, it works, and this is what it is all about.

### South African Origins

The DVR-500 instruction manual was produced for MultiChoice in South Africa. The DVR-500 units now being supplied by NBC have a PCMCIA (conditional access) slot but no PCMCIA card is currently supplied. For now there is no need - the transmissions are essentially free-to-air (2).

If the origins of the DVR-500 are MultiChoice, the software the installer sees when setting up the unit is "pure" Galaxy; even down to telling you on screen it is a Galaxy service. It is not, of course.

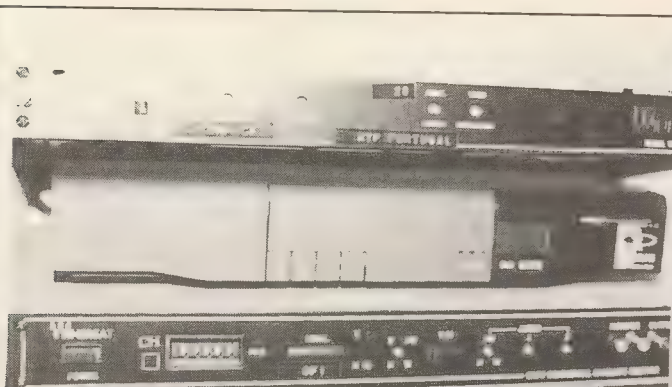
The two units we received came out of the boxes ready to go. When NBC did its changeover from analogue CNBC to MPEG-2 on 16 May the receivers instantly came up on the new service. It does not get much more hassle free than that.

Like the Galaxy DGT-400, you have through the installer menu (unlike Galaxy, pin # 0000) access to setting up the receiver's input band (by selecting the LNB frequency), input RF frequency (4093 MHz), symbol rate (29.473) and FEC (3/4). The rear apron provides left and right audio channel outputs, a mono (combined) output and a video output (all RCA type). Because this IRD is really designed for home DTH use, it also has an input for an off-air (terrestrial) aerial and a UHF modulator to directly feed a TV receiver.

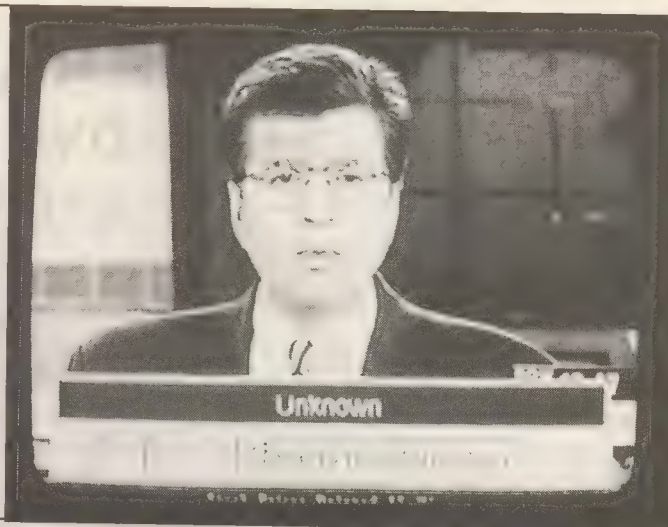
NBC Asia supplements the extensive MultiChoice manual with 9 pages of technical notes. There is no shortage of information and PACE + NBC are to be congratulated for their completeness.

Like the DGT-400 (Galaxy) IRD, everything is done through the remote control; until you have acquired





DVR-500 (middle of photo) is not rack mounting, will require shelf in cable headend. On screen, software fails to identify appropriate NBC service ("Unknown").



signal. After that up and down buttons on the front panel will change programme channels.

CNBC and NBC Asia are essentially two-language services; English and Mandarin. This allows a single video service to localise to different regions. For example, the DVR-500 has a pair of audio outputs; left, and right. Then, buried within the bit stream of the service, are "first audio" and "2nd audio" channels. The "first audio" is the default (factory setting).

CNBC Mandarin (programme channel 5) has as a default English in first audio - left channel while Mandarin appears as an option (2nd audio left channel). Using on screen prompts the two can be switched so that Mandarin comes up as the re-entered default on the left hand channel. It is certainly possible that a service such as CNBC (or NBC Asia) might appear on two separate channels in a cable system; once in English and once in Mandarin. Because the same receiver can do any of these channels in any of the available language formats,

#### NBC SET-UP PROCEDURES / DVR-500

LNB: 5150 MHz; C band frequency 4093 MHz;  
symbol rate 29473 ksymbol/sec;  
polarisation vertical; FEC 3/4.

Service	Pgme Channel	FEC	(k)(M) S/s	Video PID	Audio PID(*)
CNBC	1	3/4	29.473	200	28A
Mandar. CNBC	2	same	same	201	294
NBC Asia	3	same	same	202	29E
Not in use	4	same	same	203	2A8
Mandar. CNBC2	5	same	same	204	2B2
Mandar. NBC As	6	same	same	205	2BC
Test	7	same	same	206	2C6

\*/ Audio PIDs from NTL-3000 diagnostics; see p.8

you have a built-in redundancy safety net; should a receiver stop functioning, all other DVR 500s in the headend are a direct replacement.

#### The Heat "Problem"

SatFACTS for March 15 was anything but kind to the DVR-500. Using a report filed by a South African journalist, we passed on the unpleasant news that DVR 500s used there with MultiChoice were first of all "hot plates" and second of all unreliable. It is possible the two were related (i.e., receiver gets hot, and then becomes unreliable). It is also possible that lacking the PCMCIA card operation, the receiver runs cooler anyhow.

We are pleased to report that in 25 days of operating a pair of DVR-500 units in a cable headend, the receivers are not even "toastie." Nor have they been unreliable in any way. Other units we are aware of taking the NBC feeds are equally cool in running and reliable to date.

#### Somebody Was Bound To Ask

Can you enter in the appropriate numbers for the European Bouquet and tune in Deutsche Welle (et al)? Up to June 3rd, the answer was "no" (see page 18, here). Until that time the DVR-500 acknowledged the presence of the DW service, programme channel by programme channel, but failed to produce video and audio.

With the June 3 change in "minor software" at the European Bouquet (EBB) uplink any DVR-500 should now tune in the European services without a problem. The receiver is believed to hold 16 meg of video RAM.

PCMCIA? The DVR-500 has a "slot" for same and NBC says that when they go to conditional access (CA), PCMCIA units will be distributed to authorised affiliates. When might that be? NBC sources say two different things: "As early as July", or, "Late in 1996, early 1997." Take your pick.

This is a good receiver and if the DVR-200 version works as well with their (new) ability to tune the DVB Compliant free to air European Bouquet services, thousands of anxious Pacific and Asia receive sites will be well on the road to MPEG FTA reception.



## MPEG DVB COMPLIANT UPDATE NUMBER 4

Experience in the past 30 days has taught us the following:

1) The much anticipated Scientific-Atlanta D9223 is not DVB Compliant as it comes from Scientific-Atlanta.

2) The Pace DVR-500 initially only responded to the NBC feed on PAS-2 and the Galaxy feed on Optus B3 (although without a conditional access module properly addressed, its usefulness with the Galaxy service is virtually zero). After June 3rd, it would also work with the European Bouquet (EBB) feeds; see page 18 here. We summarise what we have learned in the table below.

A press release dated June 3 from PanAmSat has the following headline:

**"PanAmSat Delivers A First Throughout Asia:  
MPEG-2/DVB Digital Satellite Broadcast  
Services"**

The release goes on to make the following statements:

"(announced today) *it is the first satellite communications provider to offer pan-Asian digital broadcast services that meet the MPEG-2 and DVB international standards for digital video transmissions.*"

"...*The digital video systems, built by Scientific-Atlanta, enable PanAmSat to transmit digital channels with high quality picture and sound clarity while facilitating the efficient use of its satellite resources. The systems support MPEG-2 and DVB, the emerging world standards for advanced digital broadcasting. Signals are distributed to broadcast,*

*cable and satellite master antenna television (SMATV) outlets as well as households equipped with television receiver-only antennas."*

As reported on pages 6-8 here, the Scientific-Atlanta PowerVu MPEG-2 encoding system cannot be received by a (European) DVB Compliant format receiver such as the NTL 3000. Nor, will the PowerVu receivers work in their PowerVu factory set-up configuration with the DVB Compliant transmissions of EBB (the European Bouquet) or the other test transmissions on AsiaSat 2 that are presently in DVB Compliant MPEG-2.

PanAmSat says it is "*the first satellite communications provider to offer pan-Asian digital broadcast services that meet the MPEG-2 and DVB international standards for digital transmission.*" Note they do not reference the European origins of DVB, nor do they ever use the key phrase "compliant." SatFACTS has been told by a representative of Scientific-Atlanta that PowerVu receivers are factory configured to be "compliant" (i.e., obedient to) only the Scientific-Atlanta encryption stream from their own DEMC (digital uplink control centres). It follows, then, that the press-agentry for MPEG-2 services via PanAmSat should have further explained that the PowerVu system is but the latest expansion by S-A to continue to sell a proprietary encryption system that allows them to control receiver selection for PanAmSat services. As it now stands, if you wish to view a MPEG-2 PanAmSat service, you

		NTL System 3000		S-A D9223		Galaxy DGT-400		Pace DVR-500	
SERVICE	BIRD	LOCKS ON/ No V or A	Full V and A reception	LOCKS ON/ No V or A	Full V and A reception	LOCKS ON/ No V or A	Full V and A reception	LOCKS ON/ No V or A	Full V and A reception
EBB 4000	As2		Yes	Yes	No		Yes ****		Yes ****
Star-3700	As2	Yes	No	No	No	Yes	No	Yes	No
Star 3740	As2	Yes	(Yes*)	Yes(*)	No	Yes(*)	No	Yes	No
Star 3900	As2		Yes	Yes	No	Yes	No	Yes	No
APTV 3799(**)	As2		Yes	Yes	No	No	No	No	No
NBC Asia	PAS-2		Yes	Yes	No		Yes		Yes
Galaxy	Optus B3	Yes	No (***)	Yes	No		Yes	Yes	No (***)

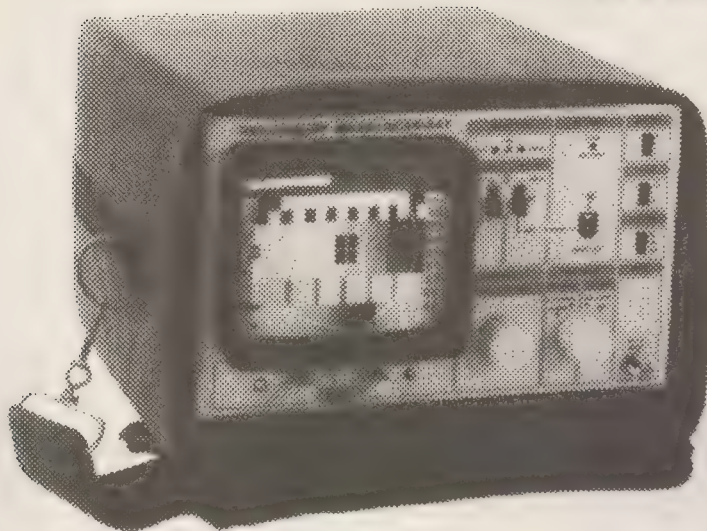
\*/ This was prior to implementation of conditional access (June). \*\* / APTV parameters are 3799 MHz, horizontal, 5.632 Msym/sec (56.32hsym/sec), FEC 3/4. \*\*\* / Conditional access prevents direct viewing except on preview channel service and occasional free to air testing. \*\*\*\*/ After June 3rd.



# PANORAMIC SATELLITE METRE

## MC10-SAT

AU\$1599 (TAX-EX)



A PERIFELEC  
PRODUCT

- SATELLITE POINTER AND FIELD INDICATOR WITH RECEPTION ON 14cm (5.5") SCREEN
- FREQUENCIES FROM 950 TO 2150 MHz
- DISPLAY OF FULL-BAND AND EXPANDED SPECTRUMS ANALYSER
- DISPLAY OF PICTURE OF SELECTED CHANNEL
- POSITIVE (Ku Band) AND NEGATIVE (C Band) VIDEO DEMODULATION
- MEASUREMENT OF SIGNAL RECEPTION STRENGTH BY WHITE BAR SUPERIMPOSED ON THE PICTURE AND PROPORTIONAL IN LENGTH TO THE SIGNAL IN STRENGTH
- RANGE OF MEASUREMENT OF SIGNAL STRENGTH BY WHITE BAR SUPERIMPOSED ON THE PICTURE AND PROPORTIONAL IN LENGTH TO THE SIGNAL STRENGTH
- RANGE OF MEASUREMENT OF SIGNAL STRENGTH FROM 50 TO 90 dBμV
- POWER SUPPLY TO LNB IN 14 OR 18 VOLTS AND 22 KHz
- BATTERY LIFE : ABOUT 1 HOUR
- WEIGHT : 5.1Kg

THE MC10-SAT SATELLITE FIELD STRENGTH METER IS NOW CONSIDERED AS THE ESSENTIAL TOOL FOR ADJUSTING SATELLITE RECEPTION DISHES. THE VISUALISATION OF THE SPECTRUM AND THE PICTURE ALLOWS THE CARRYING OUT OF ALL THE NECESSARY ADJUSTMENTS WITH THIS ONE INSTRUMENT.

**FREQUENCY RANGE :** from 950 to 2150 MHz  
**TUNING:** Multiturn potentiometer  
**INPUT IMPEDANCE :** 75 Ohms  
**INPUT CONNECTOR :** F-TYPE  
**INPUT ATTENUATOR :** 0.10 & 20 dB USING 3 POSITION SWITCH

#### SIGNAL STRENGTH :

- **INDICATION :** by a white bar superimposed on the picture, its length being proportional to the strength of the received signal, and also by audio indicator
- **READING :** on the scale from 0 to 70 dBμV
- **MEASUREMENT RANGE :** from 50 to 90 dBμV
- LNB POWER SUPPLY :** 14 or 18 V and 22 KHz by switch

#### DISPLAY ON 5.5" CATHODE TUBE

- **SPECTRUM :**
- Full band spectrum (FROM 950 TO 2150 MHz)

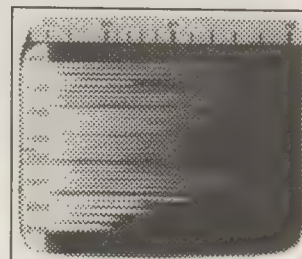
- Expanded Spectrum with visualisation of the counter-polarisations

#### - PICTURE :

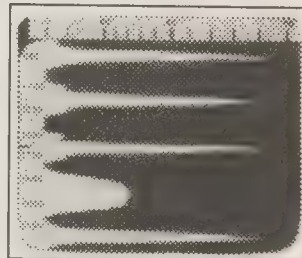
- positive video polarity (Ku Band) or negative video polarity (C Band)
- Picture of selected channel only
- Picture of selected channel with signal strength indication

**POWER SUPPLY :** 12V, 3 AH battery  
**CONSUMPTION :** 1.2 A (without LNB)  
**BATTERY LIFE :** about 1 hour  
**CHARGING TIME :** about 4 hours  
**DIMENSIONS :** 240 x 140 x 270mm  
**WEIGHT :** 5.1Kg

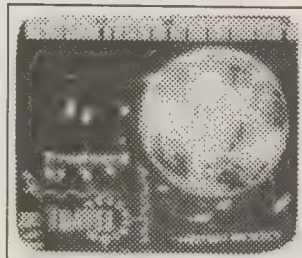
**ACCESSORIES INCLUDED :** Measurement cord, AC mains adaptor, charging lead for car cigar-lighter, case.



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## C2M PROOF!

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## SL-8000RP

4500 years ago, the Egyptians were so far advanced in building technology that the pyramids were considered to be one of the Seven Wonders of the World. Today, still standing, these magnificent shrines to the achievements of man leave us marvelling at the skill and dedication of these ancient people. Fine craftsmanship is truly an ageless art.

Palcom receivers reflect skills and craftsmanship based on the same traditional values. The flagship of the Palcom range, the SL-8000RP is another marvel of technology.

## From BC2500 to SL-8000RP

Its unique moving Picture-in-Picture feature permits the viewing of two channels at the same time (on one TV or two) or watching one channel whilst recording another. Mix images from satellite and terrestrial TV, satellite TV with VCR playback or satellite TV and security camera output with a choice of picture size for each image source.

The weakest signals may be viewed using the Palcom low threshold tuning facility producing improved video and audio performance.

A built-in antenna positioner provides access to all current satellites

500 Channels • 2 Tuners • 3 IF Inputs • Weak signal Video and Audio processing • HiFi 1600 • Stereo Audio processing (surround) • On Screen Display in 6 languages • Channel Naming • Satellite Naming • LNB Naming • Decoder Naming • 16 Local Oscillator presets (adjustable) • 22kHz Tone Switching • Global and Fine Ferro/Skew adjustment • Alphanumeric Channel List • Favourite Channel Function • 16 Preset External Decoder configurations • Internal VideoCrypt ready • Timer / Priority switching for TV and VCR

# PALCOM



must purchase a Scientific Atlanta (PowerVu) receiver. So much for the promise of a world-wide standard for MPEG-2. And as we report on pages 6-8 here, because S-A has not provided technical backup support to our press deadline, we cannot report to you whether there is, in fact, some "secret combination code" that will unlock the D9223 for the European Bouquet services. So much, perhaps, for a world-wide DVB Compliant standard supported by S-A.

Pace DVR-200. This unit was originally expected by Skandia Electronics Pty Ltd. (Melbourne) and their distributors in mid-May. As we go to press the arrival date has slid several times and is now reported to be (hopefully) the last two weeks of June. Why the delays? We understand there has been a "software squabble" between the receiver manufacturer (Pace) and the co-developer of the (conditional access) software; Iredito. If the DVR-200 arrives as promised, it will include a "slot" to plug in (at a future date) a PCMCIA (conditional access) module. Software to control the programme channel selection is reported to belong in part to Iredito and this is the problem: Will Iredito realise anything through Pace for the world-wide sale of the DVR-200 and its CA ability?

Good grief.

So while Pace and Iredito squabble comes reports of several additional DVB Compliant (they claim - we'll tell you after testing!) units showing up in "test quantities" in the Pacific and Asia. A Panasonic IRD520 has arrived at OPAC Pty Ltd (Jacob Keness, tel. 61-2-584-1233; fax 61-2-584-1452), a Grundig was scheduled for test at AV-COMM Pty Ltd. just as we headed to press.

Further, a search of Internet by Eric Fien (Commercial Satellite Systems Installers of Australia) finds several additional listings of note.

1) LSI Logic has a L64704 single chip satellite receiver. It says it is "fully compliant to the European DVB standard (and) is capable of operating at rates from 2 to 64 Mbits/sec." This 100 pin all in one chip package works with a "low-cost tuner" and functions with a 3.3V power source. LSI will provide an evaluation board for receiver developers (tel USA 415-940-6877).

2) French firm MDS offers a MMDS Hypercable and satellite decoder which they also claim is "DVB Compliant." The CDTV 110 handles symbol rates from 2Mb/s to 30Mb/s whether SCPC or MCPC. The decoder is individually addressable (tel France 33-78-48-23-33).

3) Another French firm, Sagem, offers their ISD 2100 "Consumer integrated MMDS Hypercable and satellite decoder" which appears in many ways to be related to the MDS product just noted. They claim it is designed to

"support different conditional access systems." The stand alone unit has a symbol rate from 2 to 30Ms/s, FECs from 1/2 to 8/9 and specifically states it is "DVB scrambling compliant."

#### Relating Carrier to Noise to BER

Those accustomed to making C/NR (carrier to noise) measurements with an appropriate spectrum analyser and then relating the C/NR to anticipated analogue format signals of varying transmission bandwidths will be distressed to learn there is no comparable measurement for equating C/NR to the bit error rate (BER).

When the FEC rate and/or Msym/sec rate is changed (example: Star is FEC 1/2 at 28.1; SA's DEMC is FEC 3/4 at 30.8), the BER will change for a given C/NR. Therefore the BER relationship between C/NR as properly measured for Star transmissions and the C/NR as measured for S-A's DEMC will not be the same.

We loosely define analogue threshold as the point where there are no more visible "sparklies" in the picture. For the Star parameters of FEC 1/2 and Ms/s of 28.1, they define threshold as where you get "one hit" every 15 minutes. Characterisation of the Star (AsiaSat 2) transmissions suggests the threshold point occurs at a BER reading (the receiver will tell you what the BER is) of 5E2. If you try to translate the C/NR of the signal at 5E2 to the analogue world, you should come out someplace in the range of 4 dB C/NR in 27 MHz analogue bandwidth terms.

When you start from that number, the following BERs would apply (although the C/NR is far less exact):

BER	C/No (dBHz)	C/NR analogue	BER	C/No (dBHz)	C/NR analogue
7E-2	78.1	<4dB	1E-2	81.8	7dB
6E-2	78.3	<4dB	9E-3	82.3	7.5dB
5E-2	78.8	4dB	6E-3	82.8	8dB
4E-2	79.3	4.5dB	4E-3	83.3	8.5dB
3E-2	79.8	5dB	3E-3	83.8	9dB
3E-2	80.3	5.5dB	2E-3	84.3	9.5dB
2E-2	80.8	6dB	1E-3	84.8	10dB
2E-2	81.3	6.5dB	7E-4	85.3	10.5dB

Change the FEC or symbol rate and the results change. A receiver that provides you with the actual bit error rate as well as a relative signal level is extremely handy as a measurement tool on its own. Receivers that provide only on screen "indicators" (such as the DGT-400 and DVR-500 and their "fuel gauge" displays) are almost useless for quantifying the performance of a system (although the "fuel gauges" may help you peak on the satellite). When you have the opportunity to lobby for receiver features with new manufacturers, insist on having the BER displayed as well as a relative signal level in real numbers; not fuel gauges. And our giant learning curve goes on!



## SATELLITE TV TECHNOLOGY CORRESPONDENCE COURSE

*The official technician certification course of the SPACE—Pacific satellite trade association*

**THE SATELLITE TV TECHNOLOGY CORRESPONDENCE COURSE** is a complete home/office study program that has been expressly developed for students and professionals who wish to expand their knowledge and technical skills. The course consists of the *Satellite TVRO Handbook* and *Satellite TV Technology Overview* videotape, supplementary text materials on the latest technical developments in the Asia/Pacific Region, four take-at-home exams, a report card, and a certificate upon course completion. Students are able to proceed at their own pace and receive clarification from the course leader concerning specific course topics or ask questions on related topics.

**THE SATELLITE TV TECHNOLOGY CORRESPONDENCE COURSE** is taught by Mark Long, Founding Publisher of the *World Satellite Almanac*. Each of the four major course exams are mailed to registered students upon receipt of their written request for the exam materials. Completed exams are returned to the course leader for grading and suggestions for further study to clarify those points on each exam which the student may

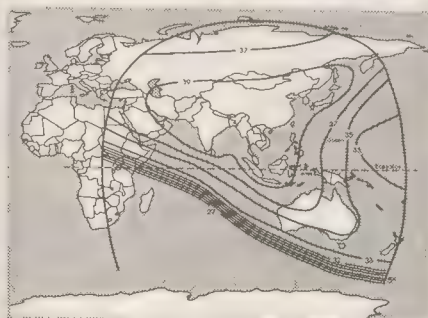


**CORRESPONDENCE COURSE VIDEOTAPE (ABOVE):**  
**PART ONE: THE SPACE SEGMENT:** Orbits & Orbital Assignments; Frequencies; Satellite Frequency Bands S/C/Ku/Ka; FSS vs BSS Satellite Frequency Assignments; Satellite Transponders; Satellite Polarization Formats; Satellite Communication Subsystems; and Interpreting Satellite Coverage Maps. **PART TWO: THE EARTH SEGMENT:** Antennas & Feedhorns; LNBs; Receivers and IRDs. **PART THREE: VIDEO AND AUDIO PROCESSING:** Video Standards - NTSC, Pal And Secam; HDTV; Video Encryption; Digital Video Compression; Digitizing Video; MPEG & MPEG DVB; MPEG Compression Techniques; MPEG Data Rates; Transmitting MPEG Via Satellite. **PART FOUR: INSTALLING SATELLITE RECEIVING SYSTEMS:** Antenna & Feedhorn Alignment; Installing Digital Receiving Systems. 60 minutes, PAL-VHS.

not have fully mastered. Upon successful completion of the four major exams, each student will be awarded a certificate of course completion.

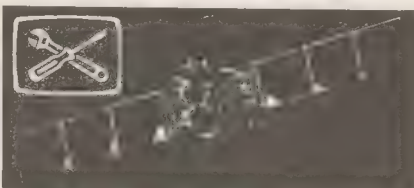
## THE SATELLITE TVRO HANDBOOK

written & compiled by Mark Long  
 Founding Publisher of The WORLD SATELLITE ALMANAC



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THE OFFICIAL  
 TECHNICIAN  
 CERTIFICATION  
 TEXTBOOK OF  
**SPACE Pacific**  
 Satellite  
 Program  
 Access  
 Committee  
 The trade association of  
 private satellite-direct systems  
 in the Pacific Ocean Region



Available from SPACE—Pacific for NZ\$ 650, A\$600, or US\$ 394, **THE SATELLITE TV TECHNOLOGY CORRESPONDENCE COURSE** includes the basic course textbook, a one-hour course videotape, supplementary text and graphic materials, exams, a report card, a certificate upon successful completion of the course and all shipping and handling fees. Contact: SPACE—Pacific, PO Box 30, Mangonui, Far North, New Zealand. Fax: 64-9-406-1083

**CORRESPONDENCE COURSE TEXTBOOK (Left):** A comprehensive introduction to all aspects of satellite video and audio technology covering basic satellite terminology and the interpretation of satellite coverage maps; satellite subsystem overview; satellite telecommunication frequency assignments; video transmission and encryption standards, digital video compression and HDTV; international satellite earth station component guide; how to install satellite TV receive only (TVRO) systems, modified polar mount alignment; inclined orbit satellite tracking guide, SMATV system design; the effects of solar outages and rain fades on satellite system design, and a complete lexicon of satellite terminology. The official technician certification course textbook of SPACE Pacific. 212 pages illustrated.



## THE GAMES THAT DVB PROGRAMMERS ARE PLAYING

A fax from Johannes J. Firsbach at Deutsche Welle June 3rd advised:

*"We have today done some minor software changes on our digital broadcasting to Asia and Australia. Could you please do us a favour and try to receive the European Bouquet with equipment from PACE, Galaxy and other companies?"*

By the morning of June 5th hundreds of DGT-400 (Galaxy IRD) and several dozen users of (Pace) DVR-500 boxes (for NBC Asia) had tuned in and to their delight found the European Bouquet (EBB) coming through clean and clear whereas previously they did not.

What sort of software change was made? And was it, really, minor? Equally important, if EBB could change an uplink parameter and suddenly be received by thousands of non-DVB Compliant receivers what does this say about the "games" that other uplinkers might play in the future?

Curious minds want to know!

Two "informed" schools of thought immediately developed. First:

The individual EBB programme channel "bandwidth" (megasymbol rate) had been lowered from 8Ms/s to 6Ms/s (\*). Anyone equipped with an NTL 3000 receiver can determine this from the diagnostics screen.

But would that alone cause DGT-400 and DVR-500 receivers to suddenly work? Probably not. On the other hand, if EBB had been using "high level B frames" as a part of the MPEG-2 encoding format, by switching off "B frames" this could certainly account for the sudden ability of the lower priced receivers to work on EBB.

*"High level B frames?"* To get the maximum efficiency out of MPEG-2 compression, the receiver must have sufficient video RAM (memory) to carry redundant information "forward" in time as a reference. The more information the receiver "carries forward" the greater the compression can be. Receivers such as the DGT-400 and DVR-500 have 16 megs of video RAM. Ideally, for maximum compression efficiency they would have 20 megs of video RAM; even more. The cost difference in the receiver between 16 and 20 meg of video RAM memory is considerable, however.

If you assume all receivers to use your service will have 20 megs or more of video RAM, you can compress the "hell" out of the signal and the receiver can cope

with it. If, on the other hand, the receiver has less video RAM memory, you have to back off the compression. And there is a trade off: Less compression, less bandwidth and less bandwidth, less detail in the imagery. Or, if you try to telecast an event with very rapid scene changes (such as an auto race with the race car flashing by the camera location from one edge of the screen to the other) the system cannot handle the very rapid changes - and - the image freezes up. This is the fabled "freeze frame" artefact.

In switching from 8Ms/s to 6Ms/s, there would be a price in video quality. At the same time, because so few receivers have 20 meg of video RAM in them, the broadcaster would gain a bigger potential audience.

With more and more "lower priced" (read: smaller video RAM memory capacity) receivers coming into the marketplace there will be an ongoing game played here. Find the compression level which most receivers can deal with, and then settle on that number. As video RAM memory increases (and as the price for this ingredient comes down) over time, a broadcaster can always later introduce "(high level) B frames" into the transmission parameter. For now, if you want an audience, you had better adjust your transmission parameters to the equipment "in the field" in quantity. Not everyone can afford an NTL 3000 and its 32 megs of video RAM!

The "B frames" elimination is a theory. DW claims they did not do this, rather they merely "adjusted" the "SI" (system information) data stream. Inside the SI are all sorts of parameters which one would expect to be "standardised" in the European DVB Compliant agreement. Not all of the SI "bits" are standard. DW set their SI based upon their choice of the NTL 3000 receiver which happens to be more capable of working on a variation of SI conditions than most (certainly far more capable than the S-A D9223, for example). And, NTL provided the uplink equipment for DW which means they set the "SI" to work with their own receivers. When it became apparent that other receivers could not cope with the SI as configured, DW went back to NTL (DMV) and asked for help in reconfiguring. Was there an SI that would allow Pace DGT-400 and DVR-500 receivers "in" without tossing the NTL 3000s "out?"

There obviously was.

---

\* / The DW programme channel remains at 8Ms/s while the other 4 are now 6.



a technical and marketing  
advisory

## memo

to the membership from your  
industry trade association

## SPACE Pacific

Satellite  
Programme  
Access  
Committee



A trade association for users, designers,  
installers, sellers of private satellite-direct  
systems in the Pacific Ocean & Asia Regions

### Laws Preventing Satellite Dishes

A democratic society is a curious blend of individual and community rights. The individual is free to conduct him or herself as they see fit provided their activity does not interfere with the common "right" of another citizen to do likewise. Most laws and regulations in Australia and New Zealand draw from origins in England while the history of French law is interwoven into many of our Pacific Island nations.

A court case late in May in Christchurch (NZ) is an example. A Japanese born family, residing in Christchurch, had been ordered to remove a 3m satellite dish because the dish violates several local "regulations." First, Christchurch allows no dish larger than 1m in size and all dishes require a building permit. Further, satellite dish antennas are required to be placed so they are *"not visible from the street nor by neighbours."* As SF goes to press, the Judge who heard the case is promising a decision around the middle of the month.

In 1990 New Zealand adopted a national law regulating use (and misuse) of "natural resources." The intent of the law was to make it possible for local and regional District Councils to then draw their own rules and regulations to inhibit dumping of sewage in streams, misuse of chemicals that could endanger innocent people, and restrict anyone from building anything that might be construed as "visual pollution" by neighbouring parcel owners.

Many Councils have taken this "Resource Management Act" and formulated complex rules and

regulations governing a range of human activities. The Wellington (NZ) Council limits "Satellite dish antennas" to 50cm size, for example. And special interest groups have quietly "assisted" Councils in formulating these new rules. One can certainly envision terrestrial TV broadcasters stirring the pot behind the scenes to coerce Councils to make dish size limits as small as possible.

The Christchurch case bordered on ugly. NHK (Japanese home TV) is available on PAS-2 and a 3m dish is required for near threshold reception. Several dozen Christchurch families have installed such dish systems. In two cases that did not go to court, the families were able to lower the dishes to ground level (essentially laying on their backside) allowing just enough clearance to still see PAS-2. The family that could not do this and still "see" PAS-2 ended up in court. Sentiment in Christchurch ran high ranging from those who recognise that satellite dish reception is an extension of freedom of choice and speech to those who saw the dish as an embodiment of "foreigners" coming to town and "doing as they please without respect for our heritage."

Testimony from those defending the Japanese family ranged from technical information that explained how dish size and reception quality interrelate to defensive explanations of why Europeans with their 50-90cm dishes are able to receive satellite TV while in Christchurch this is not possible (Europeans, of course, have high power Ku band satellites). Both "sides" promise to appeal, no matter the outcome. Satellite dish antennas have been singled out by Councils. A rotating,

## MEMBERSHIP IN SPACE

Membership in SPACE Pacific is open to any individual or firm involved in the "satellite-direct" world in the Pacific and Asia regions. There are four levels of membership covering "Individuals," the "Installer/Dealer," the "Cable/SMATV Operator," and the "Importer/Distributor/Programmer."

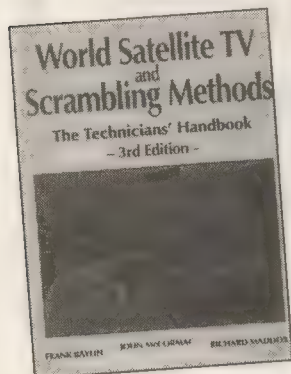
All levels receive periodic programme and equipment access updates from SPACE, significant discounts on goods and services from many member firms, and major discounts while attending the annual SPRCS (industry trade show) each January in Auckland. Members also participate in policy creation forums, have correspondence training courses available. To find out more, contact (fax) 64-9-406-1083 or use information request card, page 30, this issue of SatFACTS. Page space within SatFACTS is donated without cost each month to the trade association by the publisher.



# AV-COMM SATELLITE TV EQUIPMENT

## WORLD SATELLITE TV AND SCRAMBLING

Cat # B1020

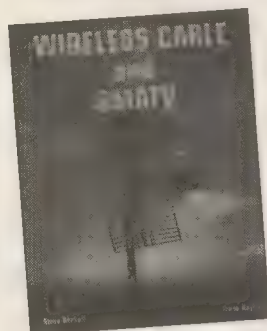


Known as "the technicians' handbook", this text is a must buy for technicians, satellite professionals, and enthusiasts. The design, operation, and repair of satellite antennas, feeds, LNBs and receivers are examined in detail. An in depth study of scrambling methods, and broadcast formats is the backdrop to a discussion of all current American and European satellite TV technologies, including the

Videocypher II, Oak Orion, Filmnet, UK Sky Channel, EuroCypher, D2MAC, BSB and Teleclub Payview III. Circuit and block diagrams of all components are presented and clearly explained throughout the book.....\$79

## WIRELESS CABLE & SMATV

Cat # B1011

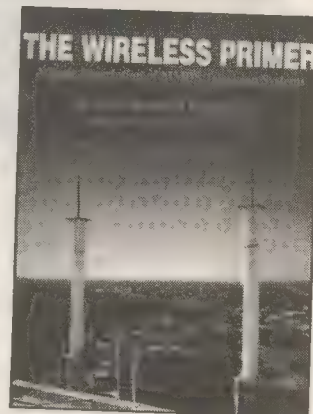


A comprehensive study of the new broadcast method, Wireless Cable, and the closely related field of satellite master antenna TV systems (SMATV). Three chapters are dedicated to details of the site survey, planning and design phases of a private cable system. Off air and satellite headends and all components from antennas to processing and mixing electronics are studied in detail. Ideal for those

considering an MMDS installation. ....\$89

## THE WIRELESS PRIMER

Cat # B1021

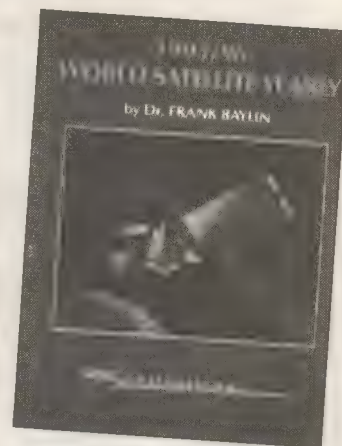


A 76 page complete description of MMDS television systems. This first edition, published in 1995, contains thirteen comprehensive chapters covering all aspects of system design, and shows actual on-air configuration of a 31 channel MMDS system. A valuable reference for anyone involved in installation or maintenance of an MMDS system, "The wireless primer" shows how one operator in the USA saved \$100,000 on hardware by following the designs in this book!! .....\$45

## 1995/96 WORLD SATELLITE YEARLY

Cat # B1013

The 768 page 1995/96 World Satellite Yearly contains the latest information about satellites, technology and programming. Features updated chapters on audio and video compression, footprints for satellites launched during 1994 and projected for 1995/96, and worldwide programming assignments. The ultimate reference book on satellite TV footprints, programming and technology. ....\$140



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Hills Brand, clothes line, measuring 5.6m in diameter, requires no building or conditional use permit. Nor are there special regulations governing where it may be placed. A VHF/UHF television antenna on a 10m mast held in place with guy wires on top of a roof also requires no permits. So we have semi transparent objects (i.e., the clothes lines) that are far bigger, or objects several times higher in the air (i.e., terrestrial TV antennas) which require no special action. A satellite antenna is specified as a "permit item" for reasons that are totally unclear. And if a permit is required, it may take two separate actions:

1) The dish builder is required to obtain a building permit, which may also involve engineering drawings and statements of structural strength by a certified engineer (all at additional costs), and/or,

2) Individual Council rules may require the proposed dish be put out to "public notice" where the public is notified (by newspaper advertising) for as long as 90 days and then invited to a "public hearing" to voice their objections to the proposed "structure."

Neither building permits nor public hearings lend themselves to the rapid growth of home satellite TV systems.

In Auckland a facility wished to install a pair of 4m range satellite dishes. The property owner obtained the necessary building permit forms, completed them and turned them in to the appropriate Council office. Attached were a pair of professional engineering drawings spelling out the dishes, their mounts, and the manner of attachment to a roof.

The Council officer saw "satellite" and immediately went to his rule book. "This will require a public notice hearing" he advised. The property owner asked for the papers back and removed the drawings prepared by the engineer, and where on his form the project described a "satellite" antenna he changed the terminology to "television" antenna. All of this was done in front of the Council officer. He handed the papers back to the officer.

"TV antennas don't require a building permit, and they don't require a public hearing" he smiled and stamped the application "approved" just for good measure. The dishes were installed two weeks later and nobody has ever questioned them.

It turns out TV antennas, a "bird bath," a "solar collector" (to heat water or to create electricity) are amongst the many items requiring no permit and no hearing.

A satellite dish could in fact be utilised for many different applications. String a clothes line across the top and hang a tea towel on it for drying. Put a bucket under it on the ground to collect rain water. Go to Dick Smith and spend \$20 to purchase a silicon cell solar power panel, affix the solar panel array (a few cm square typically) on the dish surface to "collect" solar power. Connect a piece of terrestrial TV cable to it and call it a 'UHF TV antenna.' Mount a flag on it and call it a flagpole. Have the family go into the yard and sit under it for a brief period each Sunday morning and call it an altar. Stand behind it when the wind is blowing and call it a wind break. An Englishman mounted his satellite dish on a boat trailer and 'installed' it in the side yard. Because the trailer was "mobile" (in theory it could be moved), he had not "mounted" nor "installed" anything there; he was merely "parking" the trailer and dish.

Bureaucrats who write rules and regulations for us all to live by have selectively chosen "satellite dishes" as an item of special concern. If the neighbours don't like the way you mow your lawn, discipline your children, or your choice in automobiles, installing a satellite dish in your yard becomes a red flag. After a quick call to the local Council office, they rub their hands together with glee; now they have you where they want you!


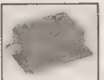
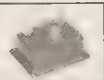






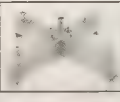
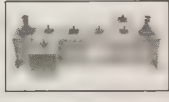

**Satellite dish?** "You mean my bird bath (solar collector, family altar)?" **What satellite dish???**

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# The CABLE Connection



## Antenna Feed Longevity

Cable or SMATV system antennas are typically designed to endure more than the normal level of winds and abuse. When a modern cable system employs multiple dishes the matter of routine surveillance of dish condition and performance becomes more critical as the work load grows.

Dish alignment (staying pointed dead-on the bird) is one routine maintenance activity. Checking the performance of LNBs becomes more important than ever when you are receiving MPEG digital signals and more difficult as the analogue signals are replaced by digital signals.

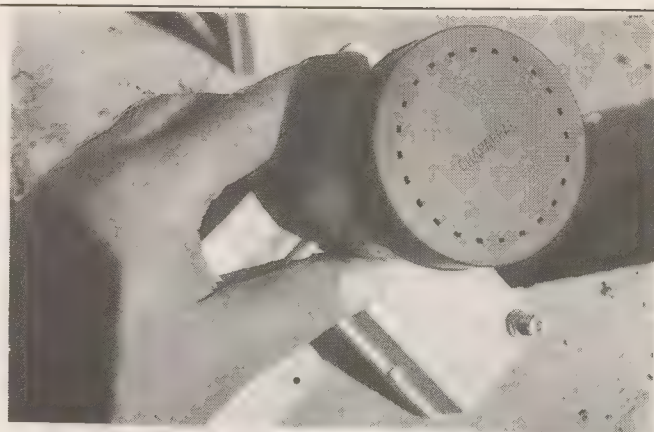
There is one "passive" part of a typical dish antenna system which is taken for granted and seldom checked to ascertain whether the performance has deteriorated; the feedhorn that captures the parabolic reflector energy and delivers it to the input port of the LNB(s).

So what can go wrong with a passive chunk of tubing or pipe (the waveguide "mouth" at the front of the feed assembly)? It can take on moisture, for one thing, and although it will always look "down" (i.e., in theory water cannot collect inside of it because gravity will pull the moisture down and out), it can still become choked with "foreign" objects.

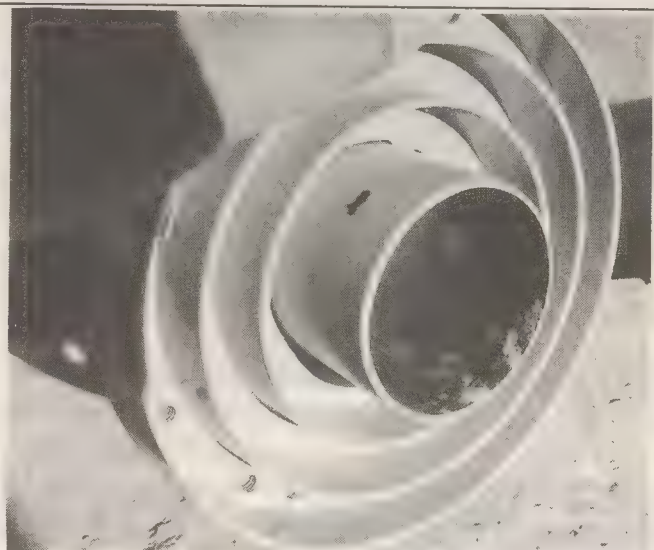
A common "foreign object" is a wasp, spider or another creature that chooses the interior to set up housekeeping. Most feed suppliers provide a cap that fits over the open end of the waveguide feed tube (see photo, top right) and the cap is supposed to keep creatures out. A wasp nest inside a feedhorn is very common; even small birds have been known to set up housekeeping.

Any object inside of the feed, especially if the object has moisture or can collect moisture (a wasp nest makes an excellent sponge), can cause major signal loss. The plain looking piece of pipe (waveguide) is a surface transmission device. Microwave satellite signals enter the open ended mouth after being reflected towards it by the parabolic reflector and "guide" these signals along the inside walls of the metallic surface to the LNB probe(s).

The aluminium or alloy surface should ideally be totally smooth; no nicks, ridges, bumps or foreign



Cap over throat of waveguide (feed) is perforated to keep crawly creatures out



Orthomode feed throat with cap removed for photograph after 30 days on dish



Same feed after one year of service

objects clinging to the surface. Anything that "roughens" the surface, i.e., that disturbs its smooth metal state when new, is going to cause signal loss. A wasp nest, spider web filled with the carcasses of dead insects devoured by the spider will cost you important signal even before it arrives at the LNB.



In the photos here a popular dual mode (fixed polarity for vertical, horizontal) feed is shown first after it had been in service for one month (middle photograph, facing page). Then in the bottom photo, the same feed after one year of service.

What you see happening in the middle photo is the start of a white, chalky compound that has begun to eat into the smooth metal inner surface of the waveguide. In the bottom photo, after one year this compound has pitted the inner surface significantly and left behind what amounts to oxidised aluminium powder that clings stubbornly to the pitted surface. The inner surface of the feed is being eaten away. It should not surprise you to learn the gain of this particular dish system had fallen by several dB over the interval between the middle and bottom photos. And this signal loss was the incoming carrier before amplification, which basically means no amount of LNB "gain" can make up for the loss in carrier to noise ratio created by this inner surface deterioration.

What caused this to happen?

The antenna system was installed within 1/2 mile of an ocean. Daytime "sea breezes" carried moist, salty air to the dish and with the breathing holes in the front protective cap the salt laden air flowed into the waveguide. There, because of a combination of the sun heating the outer surface of the waveguide and the heat generated by the twin LNBs bolted directly to the feed, a

miniature greenhouse was created. The salty air condensed inside of the tube and clung with the salt to the inner waveguide surface. The result was predictable (anyone who has spent time around ocean going equipment has seen similar deterioration on aluminium parts at a dock or on a boat).

How to prevent this deterioration? If you totally cap the waveguide mouth you invite water to condense inside and form a small "pond" behind the cap. This will cause significant degradation, quickly; not the right solution.

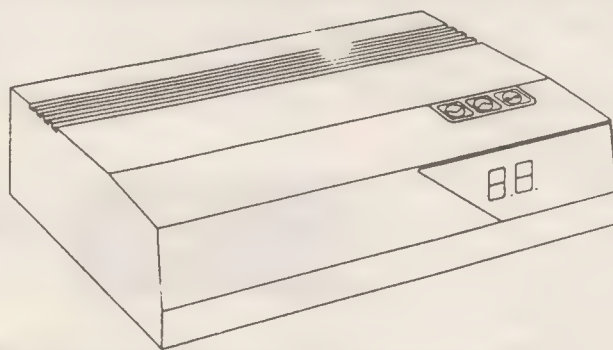
Leaving the cap off only aggravates the problem (more moist air gets inside) and now you have salt corrosion plus a bug colony living there.

One approach that seems to provide considerable resistance to inner waveguide deterioration involves very carefully coating the inside of the waveguide with a thin protective coating. There are two schools of thought here; both appear about equal in promise.

1) Deodorised fish oil, available in a spray can, can be used to apply a thin coat to the inner surface of the waveguide before you attach the LNB(s). If the feed has an alternate polarity probe encased in plastic, be careful not to spray onto it.

2) Polyurethane enamel (a clear coat material) also applies a "varnish-like" protective coating. Again, don't spray over any plastic or unprotected probes inside of the waveguide.

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**VISA CARD OK!**

SatFACTS June 1996 • page 23



# SatFACTS Pacific Ocean Region Orbit Watch: 15 June 1996

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## Free-to-Air 40E to 96.5E

RTPi	40E/1226
Rtr/Mart	40E/1475
ORTI	53.2E/ 1475
Ethiopia	57E/1220
Zee News	60E/961
ABN	62.9E/964
TV India	62.9E/986
WorldNet	66E/1135
Discovery	66E/984
Various	66E/1058
E TV	66E/1058
Discovery India	68.8/Pas4 Vt/1360
Sony Ent.	68.8/Pas4 Vt/1239
Movie Club	68.8/Pas4 Hz/1117
CNN	68.8/Pas4 Vt/1061
TNT+	68.8/Pas4 Vt/1036
BBC World	68.8/Pas4 Vt/995
MTV & Jain TV	68.8/Pas4 Vt/966
shaded indicates	reported in Europe
TW6 Mos.	80E/1275
TV Viet.	80E/1275
MAPTV	80E/1475
TK Rossi	80E/1475
TVi India	85E/1271
Moscow 1	90E/1475
Moscow 2	90E/1275
India 1	93.5/1025
India 2	93.5/1060
India 3	93.5/1420
Azerbaij.	96.5/1275
CCTV	96.5/1325

## Free-to-Air 96.5E to 128E

Moscow 1	96.5/1475
RTPi	100.5/Vt 1167
CCTV Henan TV	100.5/Hz 1430
CCTV Guandong	100.5/Hz 1310
CCTV-4	100.5/Hz 1183
Moscow 1	103.5/ 1472
Star TV	113/Vt 970
CFI	113/Hz 990
MTV Asia	113/Hz 1030
TPI	113/Hz 1070
TV Indosair	113/Vt 1090
ABN	113/Hz 1120
ANteve	113/Vt 1130
CNNI	113/Vt 1170
SCTV	113/Hz 1190
GMA	113/Hz 1230
TV3	113/Vt 1250
ATVI	113/Hz 1270
TVRI	113/Hz 1310
RTM	113/Vt 1330
RCTI	113/Hz 1350
CNBC	113/Hz 1530
JCSAT (test)	128/Vt 1166

## Free-to-Air 130E to 180E

Sun Music	130E/1225
IBC-13	130E/1265
AsiaNet	130E/1325
Laos TV	130E/1375
Sun Movie	130E/1425
RAJ-TV	130E/1475
Saudi TV	140E/1425
Moscow 1	140E/1475
Udaya	142E/1225
EMTV	142E/1265
EagleNet	142E/1325
JJAY	142E/1425
ASN	142E/1475
Moscow 1	145E/1475
NHK	169E/Hz 1115
CNN	169E/Hz 1183
CCTV-4 (MPEG)	169E/Hz 1426
RFO	180E/1105
WorldNet	180E/1179

**S14 (Gorizont)  
96.5E (RHC)  
+/- 3.2 deg.**

Jain TV	1,275
Muslim TV	1,425
Orbita II	1,475

**S21 (Gorizont)  
103.2E (RHC)  
+/- 1.9 deg.**

(Various)	1,275
APNA	1,375
Orbita II	1,490

## Russian Polarisation

S (Stationar) series satellites are RHC (right hand circular); R series are LHC (left hand circular).

## AsiaSat 2 100.7E

Sky B-Mac	1130Vt
DW Bouquet (DVB MPEG)	1150Hz 1/DW 2/TV5 3/RTVE 4/MCM 5/RAI
RTPi	1167Vt
CCTV-4	1183Hz
Reuters	1230Hz
STAR Japan (DVB MPEG)	1250Vt 1/"Plus" 2/BBC 3/VIVA 6/Sky
CCTV-2	1310Hz
APTV	1351Hz
News- crypt	1390Hz
STAR Asia (MPEG/ CA)	1410Vt 1/"Plus" 2/BBC 3/VIVA
CCTV-1	1430Hz
STAR Asia (MPEG/ CA)	1450Vt A/D'Star B/D'Star C/D'Star

**R41 (Gorizont)  
130E (LHC)  
+/- 0.8 deg.**

Sun Music	1,225
IBC-13	1,265
AsiaNet	1,325
Laos TV	1,375
Sun Movie	1,425
RAJ-TV	1,475

## Inclined Orbit

R, S series inclined orbits indicate extremes (i.e. +/- 0.7)

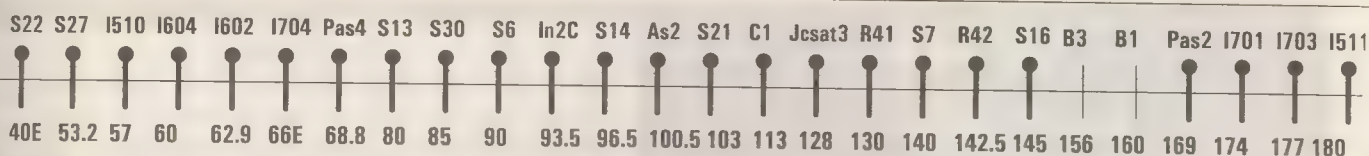
## Palapa C1 113E

Star TV	970Vt
CFI	990Hz
Radio TV Brunei	1010Vt
MTV Asia	1030Hz
ESPN (B-Mac)	1050Vt
TPI	1070Hz
TV Indosair	1090Vt
	1100Hz
ABN	1120Hz
ANteve	1130Vt
HBO (B-Mac)	1150Hz
CNNI	1170Vt
SCTV	1190Hz
	1210Vt
GMA	1230Hz
TV3	1250Vt
ATVI	1270Hz
	1290Vt
TVRI	1310Hz
RTM	1330Vt
RCTI	1350Hz
(data)	1370V
TNT+ (B-Mac)	1390Hz
(data)	1410Vt
Discovery (B-Mac)	1430Hz
CNBC	1530Hz
(MPEG)	1700Hz

## C2M Testing

Palapa C2M has begun testing at temporary location of 124E. Expect programming before 1 July. Shaded (above) C1 best of NZ reception..





### OPTUS B3 156E (Ku only)

(B-Mac)	1425/Vt
Central ABC HACBSS	1393/Hz B-Mac
Vic. ETV	1361/Vt CryptV.
Imparja TV	1329/Hz B-Mac
(B-Mac)	1297/Vt
Net 9, Sky specials	1233/Vt B-Mac
Central ABC HACBSS	1201/Hz B-Mac
	1169/Vt
Galaxy	1137/Hz Iredito Mpeg 2
	1105/Vt
Galaxy	1073/Hz Iredito Mpeg 2
Golden West	1041/Vt
	1009/Hz
	977/Vt

### S7 (Gorizont) 140E (RHC) +/- 4.3 deg.

Saudi TV	1,425
Orbita 1	1,475

### S16 (Gorizont) 145E (RHC) +/- 3.8 deg.

Moscow 2	1,275
Moscow 1	1,475

### OPTUS B1 160E (Ku only)

Net 9, Sky feeds	1425/Vt B-Mac
Data	1402/Hz
QTV	1377/Hz B-Mac
NE ABC HACBSS	1370/Vt B-Mac
NE SBS HACBSS	1344/Vt B-Mac
SE SBS HACBSS	1339/Hz B-Mac
SE ABC HACBSS	1313/Hz B-Mac
Sky Channel	1296/Vt B-Mac
ABC Radio	1276/Hz (digital)
OmniCast	1270/Vt (FM/FM)
ABC feeds	1247/Hz Pal
Net 7	1244/Vt E-Pal
Net 9 feeds	1219/Vt Pal&Ntsc
	1214/Hz
Net 10	1182/Vt E-Pal
Net 9	1180/Hz E-Pal
Net 10 feeds	1155/Vt Pal
Net 7	1120/Vt E-Pal
Net 9 feeds	1091/Vt Pal
CAA air to ground	1009/Vt Nbfm
CAA air to ground	977/Vt Scpc(fm)

### PAS-2 169E (C + Ku)

Abn/Ctn/Cctv/Nbc	1,426/Hz (Sa9222)
Cmt/Cbs/	1408/Vt (Sa9222)
Discovery (1/2Tr)	1374/Hz B-Mac
MTV Asia	1346/Vt B-Mac
ESPN	1288/Vt B-Mac
MPEG-2 PowerVu (CMT +)	1249/Hz (Sa9223)
TNT+ (1/2Tr)	1218/Vt B-Mac
CNN+ (1/2Tr)	1183/Hz
FoxSports	1161/Vt (Sa9222)
NHK	1115/Hz
MPEG-2 PowerVu (ABN+)	1101Vt (Sa9223)
Filipino Channel	1060/Hz (GI Mpeg)
NBC Ntl MPEG	1057Vt (Pace)

### (PAS-2 Ku)

Service	RF Freq.
Pas2 test	12,337
Test card	12,413
Karaoke	12730/H

### R42 (Gorizont) 142.5E (LHC) +/- 0.8 deg.

Udaya	1,225
EMTV	1,265
EagleNet	1,325
For Sale	1,375
JJAY	1,425
ATN	1,465

### Intelsat 701 174E

Feeds	963
Feeds	984

### Intelsat 703 177E

AFRTS	973 B-Mac *
Feeds	980

\* uniquely left hand circular

### Intelsat 513 177W

Feeds	963
Feeds	984

### (513 Ku)

Service	RF Freq.
US Nets	10980Vt
NBC	11015Vt
Feeds	10510Vt

### Ku Services

Intelsat Ku band services shown here are boresighted to Japan and nearby Asia, have not been reported south of equator. At boresight, signals of <2m levels.

### Intelsat 511 180E(W) +/- 2.4 deg.

TVNZ	964/Ntl 3000
TVNZ	972/Ntl 3000
TVNZ	980/Ntl 3000
TVNZ	988/Ntl 3000
Aust 9	1,021 *
(data)	1,054
Canal +	1,054 **
(data)	1,092
RFO Tahiti	1,105
(vacant)	1,137
World-net	1,179
CBS/e	1,223
Keystone	1,256
NBC/e	1,277
Mpeg tests	1,310
Mpeg tests	1,325
Mpeg	1,388
Keystone	1,432

\* RHC & LHC  
\*\* LHC only  
e/ encryption

### (511 Ku)

Service	RF Freq.
CBS	11480Hz
CNNI	11510Hz

### UPCOMING SATELLITE LAUNCHES

'Anytime Now' / 3rd Russian Express to 95E.  
October/ 1801 to 174E (with 701 at 174 moving to 180E late in 1996).  
December/ MPSC (Philippines) to 144E.  
January('97)/ 11803 to 177E.

Optus Ku Listing Credit to Garry Cratt  
of AV-COMM Pty Ltd.



# WITH THE OBSERVERS

## AT PRESS DEADLINE

Several new transponders are reported with test carriers on As2; both polarities. This satellite will bear closer watching during the balance of June. On PAS-2, expect a major shuffle in MPEG service transponders during last part of June and July as older MPEG 1.5 services are cleared off in favour of MPEG-2 services.

### The C1 Universal Measurement Sunday

The April 15th SatFACTS asked readers to document C1 reception within a specified time frame (April 28: 0500-1000 UTC). The plan was to analyse the reports and determine the true coverage of this satellite on the various transponder sets. A total of 121 Observer Reports were received spanning the region from Japan to western Australia, India to the Chatham Islands.

The analysis shows we were almost 100% correct with our detailed "early report" appearing the SF for April 15.

1) The "set" of vertical transponders 4180/970, 4100/1050, 4020/1130, (3940/1210), (3860/1290), and (3780/1370) are strongest outside of the primary Asian beam in a narrow band from south-western Japan through the Marshall Islands through Vanuatu and inland around Townsville towards Adelaide. This is probably not what the C1 designers intended.

2) Horizontal transponders 4120/1030, 4030/1120, 3960/1190, 3880/1270, 3800/1350 and 3720/1430 have a similar "offset" coverage pattern but it begins at the NE end around the Marshall Islands and extends inland through Australia on a line drawn from the Marshalls through Brisbane and south-west towards Melbourne. Of note, on the south-eastern side of this pattern the drop off is very sharp; Vanuatu has P5 service from, for example, Discovery (in B-Mac on 3720/1430) while 500 kilometres to the south New Caledonia finds Discovery significantly down in level.

3) The "hotter" (for much of Australia, New Zealand and Pacific Islands) vertical transponders are 4140/1010, 4060/1090, 3980/1170, 3900/1250, 3820/1330 and 3740/1410. Reception west of Alice Springs is marginal, however, even on a 3.7m system in WA (Anthony Teh, Warwick).

4) And the "hottest" transponders, horizontal 4160/990, 4080/1070, 4000/1150, 3920/1230, 3840/1310, and 3760/1390, are "best" from WA through Okinawa and south-east through eastern Australia and NZ. Between New Caledonia and Vanuatu there is a cross over and the hottest horizontals drop rapidly before reaching Vanuatu (B-Mac



ONE of the unique benefits of owning a home satellite dish is the ability to tune in "wild card" (unscheduled) news feeds. Here, an Australian Optus news feed terminates with the slide shown. (photo courtesy Steve Jepson, Levin, NZ)

HBO, TNT which "play" in New Caledonia do not in Vanuatu). They also drop rapidly between Okinawa and Tokyo.

Odd balls. In the midst of this "uniformity" we have some very strange transponders that appear, more or less alone, in areas where others on the same "set" are down.

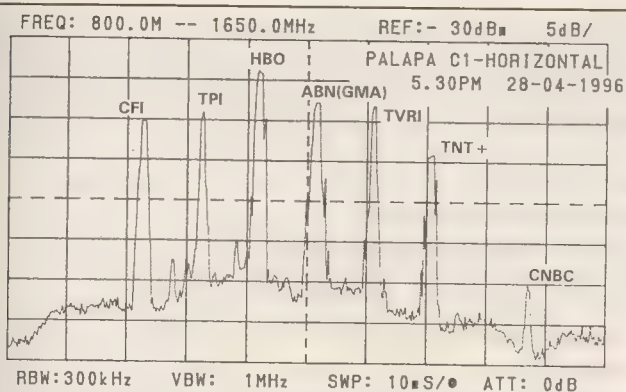
1) Western Australia: ATVI (Hz 3880/1270) is at a level of the hottest horizontal set. RCTI and GMA are a "P" point or two weaker. On the vertical "weak" set, An-teve (4020/1130) is equal to CNN and RTM which appear on the stronger vertical set. (Teh, Miller, Snowling et al)

2) Japan: CNBC (3625/1525), unique as of April 28 on the special "Asia Beam" of C1 (between 3.4 and 3.7 GHz), appears P4 on a 1.8m dish in Tokyo against P2 for the best of the 3.7-4.2 GHz signals (Steiner). Only Discovery (3720/1430) rates even a P2 on a 3.7m dish in Yokohama on horizontal while RTM-1 (3820/1330) and TV3 (3900/1250) rate P3 on the vertical side (Nagase).

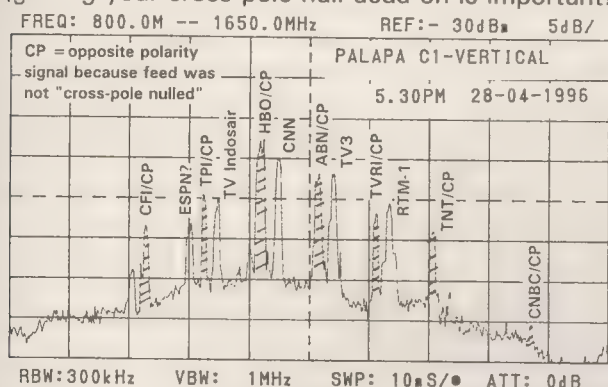
Within Australia, NSW and QLD are "the place to be" as the various different antenna patterns criss-cross to make most signals (even the weaker vertical set) at least usable. In

**WITH THE OBSERVERS:** Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. Photos of yourself, your equipment or off-air photos taken from your TV screen are welcomed. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady. Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for July 15th issue: July 4 by mail (use form appearing page 30), or 5PM NZT July 5th if by fax to 64-9-406-1083.





Observer Steven McKelvie pressed a 3m Andrew dish into service at Napier, NZ April 28th for tests (getting your cross pole null dead-on is important!)

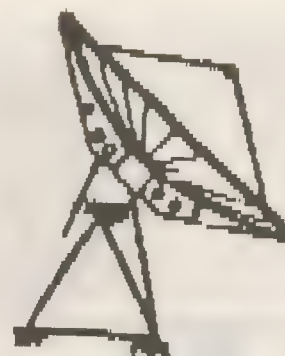


Victoria, the entire vertical side suffers badly (as **Howard Small** reports, "*Forget the verticals here!*"). Others found weak side vertical Star TV (4180/970) on a par with strong side vertical CNNI (3980/1170) which further solidifies that small changes in location can and do make a big difference with C1 reception (**Small, Bell, Kenny** et al).

**Peter Cook** (Emu Park, Qld) reported testing of two new Chinese regional TV services late in May on As2. Henan TV (IF1430, Hz) is a regional TV service originating in Zhengzhou (formerly Chengchow, at approximately 114E and 35N). Henan is one of 28 Chinese provinces and is considered the "cradle of Chinese civilisation." By observation, most of the language is Mandarin. Guangdong Satellite TV (IF1310, Hz) originates in Guangzhou (formerly Canton), southern China (113E and 23N). By observation, it is approximately 75% Mandarin and the balance is English and Cantonese. The two services differ widely in programming content; both feature sports, dramas, musicals and commercial breaks. Signal levels are as good or better than CCTV-4 which originates in Beijing on IF1183, Hz (**Alan Wing**, NZ). These three FTA Chinese services, widely receivable on dishes down to 1.8m in size in Australia and 2.4m in size in NZ, should boost home system sales in the Chinese community.

Several reporters suggest that viewers of the Indosair service on C1 (IF1090, Vt) will find an English language version audio channel at 6.8 MHz subcarrier. Transmissions with English and an Indonesian dialect often have a "multi-lingual" video "bug" in the upper right hand corner. Programmes purchased from the USA and elsewhere usually run in their original audio soundtrack on 6.8 while 6.6 and 7.0 contain the voice dubbed local language tracks. Unfortunately, all three audio channels are narrowband; very narrow band. A Uniden SQ590E and a Palcom 7900, both operating in their narrow audio bandwidth positions, produce listenable audio with some crackling every few seconds on a P4 signal. An outboard audio

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SatFACTS June 1996 • page 28

processor (USS Maspro SSP-1) operated in its narrow mode with "noise reduction" turned on totally cleans up this audio. The SSP-1 is, unfortunately, no longer manufactured so some substitute will need to be found for those after clean audio in English on this service. The USA programming, unlike that of RTM-1 and TV3, is not encrypted and on many days amounts to several consecutive hours.

EM TV experienced a number of uplink problems May 11th and were still trying to resolve them a week later. The local PT&T operates the uplink for EM TV and they selected high noon on a Saturday (in the middle of high audience sports programming on EM TV) to do a major overhaul on the transmitter (!). EM TV has been after the PT&T uplink people to correct a gradual decline in EM TV signal coverage that began a year ago. EM TV measured the signal drop off to be as much as 7 dB at its worst and claim they could and should be at least 5dB stronger every place than they have been recently. The PT&T is the only 'uplink in town' so EM TV is at their mercy. EM TV claims the graininess in their video (present even when the signal is above satellite receiver threshold) is related to a failure by the PT&T uplinker to properly handle their signal. "We deliver them a high quality signal at their uplink" comments the station's **Geoff Kong**. "What they do to it while transmitting it to the satellite has always been an unpleasant mystery." Keep after them, Geoff!

C1 uplinkers were still 'fine tuning' the boresight of their downlink antennas in mid-May. **Steffen Holzt** (New Caledonia) found ESPN B-Mac in perfect lock after a night of C1 readjustment; previously it would not even lock briefly.

C2M began radiating test carriers sometime on the 2nd of June and **Mark Long** (Thailand) was first to report them. The satellite's temporary location is 124E (JCSAT-4 will occupy this spot permanently in about a year); a much better choice than the previously mis-reported 150.5E (which is an orbit location owned by Indonesia). Carriers to June 9 have been mostly on horizontal, grouped around 1050/1160/1340 MHz (1F). Some test video was reported by **Francis Kosmalski** (Auckland, NZ) on vertical (1F 1200) around 1400 UTC on June 4th. Signal levels on test carriers are notoriously unreliable indicators of the satellite's operating eirp when modulated with analogue video so reading very much into the unmodulated carriers observed is a mistake. SF understands the plan remains to put many of the C1 service programmers up on C2M for a month or longer test. This is likely to be done in 'transponder sets' (i.e., one vertical group of 6 transponders, one horizontal group of 6 and so on). When? Probably not before July 1st.

Malaysian broadcasters RTM-1 and TV3 are likely to disappear from C1 (and/or C2M) without much notice, moving to Measat 1 at 91.5E when it is ready to accept them. The Malaysians are anxious to have their two national TV services on their national (Measat) satellite having paid rent to Indonesia/Palapa for nearly a decade now. Replacement programmers on C1/C2M for the two have not been revealed but don't be too surprised if these two transponders (1F1250 and 1330, Vt) have MPEG services eventually.

**THE "P" REPORTING CODE:** "P5"/ Noisefree on full (27 MHz) bandwidth receiver; "P4"/ No noise in reception on receiver operating with less than 27 MHz bandwidth or in TE mode; "P3"/ With bandwidth reduced, some noise but no video tearing; "P2"/ With bandwidth reduced, sparklies and some picture jitters (typically, edge tearing); "P1"/ Must be an enthusiast to watch! (Code courtesy Steffen Holzt, New Caledonia)



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## OBSERVER REPORTING FORM - Due July 4, 1996

- **New programming** sources seen since June 1st: \_\_\_\_\_
- **Changes** (signal level, transponder, programming content) in pre-existing programming sources since June 1st: \_\_\_\_\_
- **Other** (including changes in your receiving system): \_\_\_\_\_

**Note:** Please use P1-5 code when describing reception quality and receiver IF or RF settings.

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## SPECIAL C2M v. C1 COMPARISON REPORT

As C2M begins serious programme testing from 124E, we ask you to **COMPARE** the C2M programme feeds with the same feeds (as appropriate) from C1 at 113E. C2M will be either "better than," "same as" or "worse than" C1 on a transponder by transponder basis. Tell us what you observe!

Programme Channels **BETTER** on C2M: \_\_\_\_\_  
Programme Channels **SAME** on C2M & C1: \_\_\_\_\_  
Programme Channels **WORSE** on C2M: \_\_\_\_\_

Your notes: \_\_\_\_\_

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